

BULLETIN OF MISCELLANEOUS  
INFORMATION No. 5 1938  
ROYAL BOTANIC GARDENS, KEW

XXVII—ADDITIONS TO THE FLORA OF BORNEO AND  
OTHER MALAY ISLANDS: VII.\* H. N. RIDLEY.

THEACEAE.

**Adinandra cordifolia** Ridley, sp. nov., ab *A. verrucosa* Stapf, cui affinis, foliis ellipticis cordatis, petiolis brevibus, floribus minoribus, pedicellis longioribus, sepalis sericeis, baccis subglobosis glabris multicostatis differt.

*Frutex.* Folia oblongo-elliptica, obtusa vel breviter obtuse acuminata, basi rotundata, cordata, subsessilia, 11–13 cm. longa, 6.5–7 cm. lata, coriacea, glabra, supra nitida, nervis 10-paribus subtus elevatis, nervulis elevatis inconspicuis; petioli brevissimi, 2 mm. longi, crassi. Flores singuli vel bini, axillares. Pedicelli crassi, sericei, 5 mm.–2 cm. longi. Bractee coriaceae, rotundatae, sericeae, 5 mm. latae. Sepala oblongo-rotundata, pustulata, sericea, 1.2 cm. longa. Petala oblonga, sericea. Filamenta linearia, basi connata, dense sericea. Ovarium ovoideum, sericeum, 1.5 cm. longum. Stylus 1 cm. longus, stigmatibus capitato. Bacca globosa, apice plano, glabra, 20–25-costata.

SARAWAK. Beccari 1025, 1978, 3159. Pengkulu Ampat, young jungle, *Haviland* b.p.r.e. (type): "shrub, leaves broad, dark green."

WEST DUTCH BORNEO. Landak, *Teysmann* 11236.

This remarkable species is allied to *A. verrucosa* Stapf, of Mt. Kinabalu, differing in the elliptic almost sessile cordate leaves, the longer pedicels of the flower, and silky sepals. The fruit is not conic, passing into the style, but globose, flattened at the top, and with 20 or 25 rather obscure ribs. I have seen no fully developed petals.

**Ternstroemia (Euternstroemia) citrina** Ridley, sp. nov., a *T. gymnanthera* (W. et A.) Sprague, cui affinis, foliis multo latioribus ovatis vel oblongis, floribus minoribus, petalis oblongis differt.

*Frutex.* Folia ovata vel oblonga, acuminata, basi cuneata, coriacea, 6–10 cm. longa, 3–5 cm. lata, costa supra canaliculata subtus elevata, nervis 4-paribus valde inconspicuis; petioli 1–1.5 cm. longi. Flores in ramis singuli vel in racemis terminalibus 1–2.5 cm. longis. Pedicelli 5 mm. longi. Bractee ovatae, acutae, minutae, caducae. Sepala 5, coriacea, 2 externa lanceolata acuta, 3 interiora oblonga obtusa majora. Petala 5, flava, oblonga, apice rotundata, denticulata, 4 mm. longa. Stamina (in flore masculo) plura, brevia,

\* Continued from K.B. 1938, 123.

antheris lineari-oblongis. *Ovarium* (in flore femineo) ovoideum. *Stylus* 2 mm. longus. *Staminodia* pauca. *Bacca* globosa, 7 mm. longa.

SARAWAK. *Beccari* 1967, 2057. Selabat mangrove, shrub, *Haviland* 642; Kuching, petals yellow, *Haviland* 3017 (type).

The little flowers in this bush are often scattered below the leaves but in some cases crowded in short subterminal racemes.

***Ternstroemia* (*Euternstroemia*) *Hosei* Ridley**, sp. nov., a *T. patente* (Korth.) Choisy, cui similis, foliis multo crassioribus haud acuminatis, nervis patentibus nec ascendentibus, petiolis longioribus, pedicellis brevioribus crassioribus, floribus carnosis siccis atris differt.

*Arbor* vel *frutex*. *Folia* oblanceolata vel obovata, subacuta vel obtusa, basi acuminata, rigide coriacea, 8–14 cm. longa, 5–6 cm. lata, costa supra canaliculata subtus elevata, nervis 5-paribus supra obscuris subtus valde inconspicuis patentibus; petioli 2–2.5 cm. longi. *Flores masculi* singuli. *Pedicelli* 8 mm. longi. *Sepala* 5, ovata, subaequalia, marginibus denticulatis, 2 mm. longa. *Petala* 5, oblonga, spathulata, apice latiore rotundato, 5 mm. longa. *Stamina* brevia, antheris ellipticis aequalibus. *Pistillodium* semi-ovoidum. *Stylus* brevis, crassus. *Flores feminei* non visi. *Bacca* parva, bilocularis, 8 mm. longa.

SARAWAK. *Beccari* 2943. Baram, *Haviland* & *Hose* "1966," 3162; *Hose* 235 (type).

***Ternstroemia* (*Euternstroemia*) *denticulata* (Pierre) Ridley**, stat. nov. *T. japonica* var. *denticulata* Pierre, *Flore For. Cochinch.* pl. 124.

BRIT. N. BORNEO. Sandakan, East Coast, *Creagh*.

This closely agrees with the Cambodian plant of Pierre and occurs also in Siam. It is impossible to retain it as a variety of *T. japonica* Thunb., of China and Japan, as the flowers and fruits are much smaller and the foliage quite different.

***Ternstroemia aneura* Miq.**

SARAWAK. *Beccari* 1700, 1701, 1887. Kuching, small tree, flowers pale yellow, *Haviland* 2075. Baram, *Hose* 319. Mt. Poi, *Hewitt* 5.

New record for Borneo.

***Ternstroemia* (*Erythrochiton*) *Beccarii* Stapf** mss., descr. Ridley, sp. nov., a *T. denticulata* (Pierre) Ridley, cui similis, foliis enerviis rigide coriaceis oblanceolatis obtusis, bracteolis remotioribus, sepalis integris haud denticulatis differt.

*Frutex*. *Folia* oblanceolata, obtusa vel minute emarginata, basi cuneata, enervia, coriacea, siccitate supra grisea, subtus cuprea, minute longitudinaliter rugosa, 3–6 cm. longa, 1–2 cm. lata, costa supra depressa subtus elevata; petioli 5–7 mm. longi. *Flores masculi* ignoti. *Flores feminei* singuli, axillares. *Pedicelli*



graciles, 1.5–2 cm. longi. *Sepala* 5, obovata, rotundata, coriacea, 4 mm. longa, 2 externa minora. *Petala* oblonga, basin versus angustata, apicibus rotundatis, 5 mm. longa, 2 mm. lata. *Staminodia* oblonga, superne attenuata. *Ovarium* biloculare, ovulis 2 pro loculo. *Stigma* sessile, planum, lobulatum. *Bacca* elliptica, obtusa, 1.5 cm. longa, 1 cm. diametro.

SARAWAK. *Beccari* 2582 (type), 2928. Mt. Matang, *Haviland* 1469.

Peculiar in this group in its small nerveless leaves coppery beneath.

***Ternstroemia (Erythrochiton) magnifica* Stapf** MSS., descr. *Ridley*, sp. nov., nulli speciei arcte affinis, floribus maximis, foliis magnis oblanceolatis subtus glaucis distincta.

*Arbor* parva. *Folia* elliptico-oblanceolata, abrupte acuta, basi attenuata, coriacea, supra laevia, subtus glauca, 15–18 cm. longa, 6–6.5 cm. lata, costa supra canaliculata subtus elevata, nervis 15-paribus tenuibus subtus conspicuis, nervulis et reticulationibus etiam conspicuis; petioli validi, 2 cm. longi. *Flores masculi* singuli, extra-axillares, flavi, fragrantés. *Pedicellus* crassus, 1–2 cm. longus. *Sepala* 5, rotundata, coriacea, 2 cm. longa, 1 cm. lata. *Petala* 5, oblonga, apice cucullata, marginibus minute denticulatis, coriacea, basi connata, 3 cm. longa, 1.5 cm. lata. *Stamina* plurima, basi corollae adnata, filamentis brevissimis subnullis, antheris linearibus 8 mm. longis. *Pistillodium* conicum, stylo brevi obscure trifido. *Flores feminei* non visi.

SARAWAK. Kuching, *Haviland* 1984: "small tree, leaves glaucous on the back, flower yellow, sweet-scented."

This beautiful plant, which seems to have been only once collected, is quite unlike any other in the genus in its very large flowers and large glaucous leaves.

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**XXVIII—ADDITIONS TO THE FLORA OF BORNEO AND OTHER MALAY ISLANDS: VIII.\*** CONVULVULACEAE COLLECTED BY THE OXFORD UNIVERSITY EXPEDITION TO SARAWAK, 1932. S. J. VAN OOSTROOM (Rijksherbarium, Leiden).

***Jacquemontia tomentella* (Miq.) H. Hallier** var. ***micrantha* H. Hallier** in Engl. Bot. Jahrb. 49, 377 (1913).

SARAWAK. Near Long Kapa, Mount Dulit (Ulu Tinjar), under 300 m., in secondary forest, Aug. 14, *Richards* 1257: "Large liane on trees, 9–12 m. high. Corolla pale magenta. Leaves and stem whitish green."

Distribution: Borneo.

***Merremia Korthalsiana* Van Ooststr.**, sp. nov.

*Frutex* scandens, ramis teretibus in sicco cinereo-brunneis substriatis glabris vel in partibus junioribus paullo pubescentibus, junioribus gracilioribus 2–3 mm. diam., adultioribus crassioribus in typo ad 7 mm. diam. fistulosis. *Folia* petiolata, petiolis in sicco

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\*Continued from previous article.

nigrescentibus leviter striatis supra leviter sulcatis, sulco pilis brevissimis plus minusve praedito vel glabro, (2.5-) 3-6 cm. longis; laminae chartaceae vel tenuiter coriaceae, late ovatae vel orbiculares, apice abrupte acuminatae vel cuspidatae, acumine angusto acutissimo 1-1.5 cm. longo, basi late cordatae vel truncatae, (7-) 10-15 cm. longae, (7-) 9-14 cm. latae, supra in sicco nigrescentes, glabrae, opacae vel subnitidae, subtus pallidiores, in nervo mediano nervisque primariis secundariisque pubescentes vel glabrae; nervus medianus et nervi laterales primarii utrinque 7-8 (-10), ascendentes, ad marginem curvati, supra plerumque subimpressi, subtus prominentes, nervis secundariis parallelis supra leviter prominulis subtus prominentibus, nervis minoribus praesertim in pagina superiore tenuiter denseque reticulatis prominulis. *Inflorescentiae* in axillis foliorum positae, longe pedunculatae, apice cymoso-corymbosae; pedunculi circ. 12 cm. longi, minute pubescentes vel glabri, in sicco longitudinaliter striati, apice racemoso-ramosi; rami primarii plures, in axillis bractearum foliacearum deciduarum positi, pubescentes, 1.5-4 cm. longi, apice cymosi, floribus pluribus; bractee bracteolaeque parvae, lineato-subulatae, pubescentes, inferiores circ. 4 mm., superiores circ. 2.5 mm. longae; pedicelli pubescentes, ad 20 mm. longi. *Sepala* late elliptica vel orbicularia, apice rotundata, minutissime mucronata, in sicco nigrescentia, nitida, extra glabra, intus resinoso-punctulata, aequalia vel exteriora subbreviora, ad 10 mm. longa. *Corolla* late infundibuliformis vel campanulata, ad 24 mm. longa, margine obscure lobata, extra glabra, intus infra et inter bases filamentorum papillis elongatis minutis munita. *Filamenta* circ. 5 mm. supra basin corollae inserta, circ. 10 mm. longa, basi subdilatata, margine papillis elongatis minutis nonnullis praedita; antherae rectae, glabrae, 3-4 mm. longae. *Discus* brevis, sub-5-lobatus. *Ovarium* conicum, glabrum; stylus filiformis, glaber, basi non articulatus, circ. 11-12 mm. longus, stigmate bigloboso papilloso.

DUTCH S. E. BORNEO. Doesoen, *Korthals* 237 (two sheets in the Rijksherbarium at Leiden, n. 901, 184.114, a flowering branch (type), and n. 901, 184.115, a sterile branch).

SARAWAK. Mount Dulit, under 300 m., a frequent species, chiefly or entirely in secondary forest, Oct. 15, *Richards* 2219: "Large liane, corolla bright yellow."

This new species belongs to the section *Hailale* H. Hallier in Engl. Bot. Jahrb. 49, 379, 380 (1913). The description has been made from the type specimen, *Korthals* 237 in the Rijksherbarium at Leiden. The specimens collected by Richards (n. 2219) in Sarawak doubtless belong to the same species. There are, however, some very unimportant points of difference. The leaves of the specimens *Richards* 2219 are completely glabrous and a little more shining above; the peduncles may be slightly longer than in the type, reaching a length of about 20 cm.; the pedicels may reach a length of 25 mm. after flowering.



XXIX—NOTES ON AFRICAN RUBI IN THE KEW HERBARIUM. C. E. GUSTAFSSON (Trelleborg, Sweden).

It is certain that not many new species of *Rubus* can be discovered in Africa. In "Rubi Africani" (Arkiv för Botanik, **26 A**, No. 7: 1934), I pointed out, however, that my monograph did not lay claim to be final, for the *Rubus* species mentioned there are for the most part described from the type specimens, whereas individual bushes may differ in those characters which are variable or which cannot be observed in the herbarium specimens. From the present investigation it will be evident that the extent of such variations can frequently be determined only by the observation of living plants.

In Rubi Africani, p. 2, I pointed out that Focke in his "Species Ruborum" (1911) had classified the majority of the African species of *Rubus* under the Subgenus *Idaeobatus* (p. 128), which, among other characters, is distinguished in having: "fructus e carpellis multis, maturis inter se cohaerentibus, a gynophoro conico sicco vel delinquescente secedentes et ideo intus cavi." On account of the data supplied on the labels I am led to assume that the fruits of several species, on the contrary, resemble those of the European blackberries. Such notes are given for: *R. exsuccus* (by Kirk), *R. inedulis*, *R. pinnatus* var. *afrotropicus*, *R. Ledermannii* var. *serrulatus*, *R. kirungensis* and *R. Stuhlmannii* var. *aberdarensis*. Still, it is of course inappropriate to refer these species of *Rubus*, which have pinnate leaves, to the Subgenus *Eubatus*, to which the European blackberries belong. I am of opinion that they should be formed into a separate Subgenus. Matters are quite different, however, in the case of *R. rosifolius* Sm., of which Focke wrote: "fructus interne cavi." Moreover, with regard to a specimen of *R. Volkensii*, collected at an elevation of 2500 m. on Mt. Elgon, Mrs. Cyril Lugard noted: "habit like raspberry." On examination I also found that the receptacle in *R. Volkensii* is long, as in *R. idaeus*, and hairy. Hence these two species fulfil the conditions of classification in the Subgenus *Idaeobatus*.

SECTION AFRO-MONTANI FOCKE.

In Rubi Africani, p. 2, I explained that Sect. *Afro-montani* Focke contains two groups of species which are probably unrelated. One group consists of *R. Friesiorum* C. E. Gust., *R. immixtus* C. E. Gust., *R. runssorensis* Engl., *R. Doggetti* C. H. Wright and perhaps *R. afro-gustafssoni* Chiov. The other group comprises *R. Erlangeri* Engl., *R. mauensis* Engl., *R. Volkensii* Engl. and *R. Chiesae* Chiov. It is consequently important to ascertain whether the ripe fruits are hollow or not.

*Rubus Friesiorum* C. E. Gust. There are typical specimens of this species in the Kew Herbarium from the Aberdare Mountains and from Mt. Kenya. Besides, it has been collected in Tanganyika Territory, Mbulu District, Oldeani Volcano, north wall of crater,

3100 m., 23 Sept. 1933, *B. D. Burt* 4226. Burt's specimens closely resemble var. *Hageniae* C. E. Gust. The terminal leaves of one of the specimens agree with the description; in two other larger specimens they are almost circular in shape. Further, it appears from Burt's specimens that the inflorescence in more developed specimens is many-flowered and more compound. It now remains to be proved whether specimens growing in the classical localities on the Aberdare Mountains and Mt. Kenya may also have pinnate leaves. Since the terminal leaflets of the turion leaves reproduced in Rubi Africani, t.1, are lobate, there is reason to suppose such a possibility.

***Rubus Friesiorum*** C. E. Gust. var. ***elgonensis*** C. E. Gust., var. nov.; ut forma principalis sed rami floriferi densius et longius pilosi, plus minus glandulosi; foliola terminalia eorum basi integra vel emarginata, fere orbiculata; stipulae angustiores; inflorescentiae longiores et interdum latiores; sepala ovata; carpella glabrescentia.

UGANDA, Mt. Elgon, bamboo zone, 3300 m., Jan. 1918, *R. A. Dümmer* 3541 (type), and in open forest zone, Apr. 1930, *L. C. C. Liebenberg* 1645.

*Rubus Doggettii* C. H. Wright from the Bujuku Valley on Mt. Ruwenzori should be compared in the field with *R. runssorensis* Engl., also growing on Mt. Ruwenzori, so that the difference between them can be correctly determined. In "Bull. Jard. Bot. de l'État, Bruxelles," 13, 268 (1935), I suggested that *R. Doggettii* might be a shade form of *R. runssorensis*. If that is the case its leaves should be greyish on the underside when it grows in the sunlight.

*Rubus Chiesae* Chiov. In the herbarium there is a specimen named *R. Volkensii* Engl., which was collected by H. Scott on 21 Oct. 1926 on Mt. Zuquála in Abyssinia, 2700-2900 m. This specimen is more fully developed than Chiovenda's type specimen and is closely related to *R. Volkensii*. As the leaves of *R. Chiesae* may also be longly acuminate, the words "longe acuminata" in Rubi Africani, p. 7, should be changed for "aequaliter serrata" and "breviter acuminata" for "inaequaliter et incisiter serrata," but it should be noted, however, that the serration in less typical specimens of *R. Volkensii* may closely resemble that of *R. Chiesae*.

#### SECTION AFRO-DIGITATI C. E. GUST.

*Rubus myrianthus* Baker. I have referred this species to Sect. *Afro-digitati*, whereas Focke in Species Ruborum, 212 (1911), has grouped it together with some Asiatic, Australian and American *Rubi* in the Subgenus *Lampobatus*. Although I am not in a position to judge the value of Focke's classification, I should point out that the material of *R. myrianthus* which Focke had at his disposal was defective. He says (p. 216) that the leaves are ternate. Baker, on the other hand, in his description writes: "foliis digitatim quinquefoliolatis," which is correct. Further, Focke's figure



(p. 217) is incorrectly drawn, for it was made from a damaged specimen, in which the main axis was truncated. He is of the opinion, however (p. 216) that *R. myrianthus* is apparently related to *R. dictyophyllus*.

#### SECTION AFRO-IDAEE FOCKE.

Subsect. **Trifoliolati**.—Of the species grouped in this subsection, *R. Steudneri* Schweinf. and *R. adenophloeus* Focke are difficult to distinguish. The former is found in the Sudan and Abyssinia, the latter in the Uluguru Mountains in Tanganyika Territory. Both seem to grow in Uganda and Kenya Colony. For example a specimen (no. 1644) collected by Liebenberg in April 1930 in Uganda, is almost completely like the type of *R. adenophloeus* from the Uluguru Mountains. It is only a little more evenly serrated.

A specimen of *R. adenophloeus* Focke has been collected in Tanganyika Territory, above Chenzema, Uluguru Mountains, 2100 m., in secondary scrub, 2 Jan. 1934, *Michelmores* 873. The specimen entails the following correction in the description (*Rubi Africani*, p. 28): *Folia plus minus inaequaliter serrata. Foliolum terminale basi integra vel subemarginata. Foliola lateralalia breviter petiolulata, fere elliptica, parte infima petioli fere aequilonga vel longiora. Carpella primo pilosa, deinde glabra.* *Michelmores* has noted: "Flowers smallish and reddish, berries luscious and orange or red and apparently not turning black."

*Rubus Steudneri* Schweinf. In the Kew Herbarium there are two specimens of this species from Sudan, Mongalla, Mt. Kuretti, ravines, 3000 m., 10 Feb. 1929, *Chipp* 61. In one of them, it is true, the glands cannot be seen but they are probably concealed by the indumentum. In *Rubi Africani*, p. 25, it is stated that the axis is tomentose. The indumentum consists of more or less numerous stellate hairs, mixed with single hairs. In the above-mentioned specimens the stellate hairs are dense. The terminal leaves in *R. Steudneri* may have an entire or an incised base.

*Rubus Steudneri* Schweinf. var. *aberensis* Engl. seems to have a wider distribution than the main species. The herbarium contains one specimen from Abyssinia, several from Mt. Elgon or its environs and one from Mt. Kilimanjaro. This variety has few or no glands and stellate hairs are present. With regard to one specimen, collected by Major Lugard on Mt. Elgon, the note on the label says "fruit orange," while another specimen, collected by Tothill, is said to have "fruits dark reddish." From this it seems probable that the colour of the fruits may change from orange to dark reddish on ripening. On a specimen collected at Butandiga, Bugishu, in Uganda, on 3 Sept. 1932, Thomas remarks: "scandent to 12 ft., stems light brown," while Greenway notes on a specimen collected on Mt. Kilimanjaro: "scandent shrub growing over bushes and small trees."

It is to a certain extent explicable that the above variety has been confused with *R. dictyophyllus* Oliv. For instance, *R. Steudneri*

has normally grey tomentose leaves on the under side, but if it grows in the shade this greyish colour disappears and then leaves of both species have the same colour. There are two such specimens in the herbarium: Uganda, Mt. Elgon, 2700 m., *J. D. Snowden* 807, and Tanganyika Territory, Mt. Kilimanjaro, S. slope between Umbwe and Weru Weru Rivers, 1950 m., 1 Sept. 1932, *Greenway* 3216. Moreover, if only the upper part of the inflorescence of *R. dictyophyllus* has been collected, as in the case of the type specimen, it is frequently difficult to ascertain from the herbarium specimens whether or not 5-digitate leaves occur.

***Rubus ulugurensis* Engl. var. *apricus* C. E. Gust., var. nov.** Folia supra densius pilosa, subtus cano-tomentosa; foliola lateralialongius petiolulata. Axis rami floriferi magis tomentosus.

TANGANYIKA TERRITORY, Kikogo Forest Reserve, Mufindi, Iringa Distr., 31 Jan. 1934, *Michelmores* 945. Forma principalis est forma umbrosa.

*Rubus adenocomus* Focke. The type is obviously a shade form without fully developed floral branches. In Bull. Jard. Bot. Bruxelles, **13**, 268 (1935) the description has been corrected to: Inflorescentia pubescens, glandulosa, comparate parva, folia superans, ramusculis brevibus subaequilongis ex axillis bractearum composita vel ramulis longioribus ex axillis foliorum superiorum aucta.

Subsect. **Villosi**.—In Rubi Africani, p. 5, I stated that the species of *Rubus* belonging to this group are uniform. This uniformity, however, does not exclude the possibility of a variation in individual characters. In Bull. Jard. Bot. Bruxelles **13**, 269 (1935) I have stated that they vary in such a manner that, with the exception of *R. Petitianus* A. Rich and *R. petalabigens* C. E. Gust., it is difficult in the other species of the group to distinguish any stable and at the same time distinctive characters.

In Bull. Jard. Bot. Bruxelles **13**, 274 (1935) I also pointed out that the name *R. Borbonicus* Pers. should be replaced by *R. apetalus* Poir., as the latter is older and Poiret's "la Cafrerie" is situated in Réunion (Ile de Bourbon) and that specimens from there are more hairy than might be supposed from Poiret's description, but the degree of hairiness is a little variable.

*Rubus apetalus* Poir. seems to have a stronger tendency to a division of the leaves (septenate) than the other species of the group, but I have occasionally seen such leaves also in *R. Adolphi-Friederici* Engl., and Focke states that they can also be found in *R. Ecklonii* Focke.

In *R. apetalus* Poir. the carpels are more or less tomentose, whereas in the other species they are said to be glabrous. In *R. Ecklonii* Focke they are, however, said to have a few hairs at the tips. In the herbarium there is also a specimen with tomentose carpels: Uganda, Virunga Mts., in scrub at base of Mt. Sabinio,



1900 m., W. J. Eggeling 1129. As the under side of the leaves is green it is certainly a shade form, which is in fact difficult to distinguish from *R. exsuccus* A. Rich. and *R. Adolphi-Friederici* Engl. Further, there is a specimen, no. 2693, collected by R. A. Dümmer in Uganda in December 1915, in which the younger carpels are tomentose, and the older almost or quite glabrous. In its pyramidal inflorescence it closely resembles *R. interjungens* C. E. Gust., but in its comparatively strong, almost straight prickles it is similar to *R. Adolphi-Friederici*, while its deeply serrate leaves resemble those of *R. exsuccus* A. Rich.

In the type of *R. apetalus* the prickles are reddish, small, straight or slightly bent; in *R. exsuccus* they are large and falcate. In *R. apetalus*, the axis of the flowering branches appears to be bluntly angular; in *R. exsuccus* and *R. Adolphi-Friederici* it is often furrowed. In *R. Ecklonii* the terminal leaves are more elongated than in the majority of other species, but that is also the case in *R. apetalus* f. *pyramidalis*. The serration of the leaves, too, is variable.

In *R. apetalus* from Madagascar, *R. interjungens* and in a specimen like *R. exsuccus* from Uganda, the petals are said to be white; in Dümmer 2693, mentioned above, they are stated to be pale lilac-rose. Similar specimens at the Bruxelles herbarium are recorded as having petals which are violet in colour.

The inflorescence of the type specimens of *R. apetalus*, *R. Adolphi-Friederici* and *R. assaortinus* is comparatively narrow and of uniform breadth; in *R. apetalus* f. *pyramidalis* and *R. interjungens* it is pyramidal. This character can only be used when the flowering branches are fully developed. If they are but slightly developed, the number of the axillary floral branches is also reduced.

With reference to a specimen from Mt. Kilimanjaro, which is identical with the type of *R. interjungens* C. E. Gust., C. G. Rogers states: "fruits, red, edible." Another closely related specimen is said to have "fruits eaten by children, orange." From these notes it seems possible that the colour of the fruits changes from orange to red. Engler says that in *R. Adolphi-Friederici* the drupels are "sanguinei, acidæ," while Fries states that they are "rubescentes." Kirk says with regard to a specimen like *R. exsuccus* that "the fruit is good, exactly like the brambles but small." In Rubi Africani, p. 36, I wrote with regard to *R. exsuccus*: "fructus atro-rubri?" and, according to Richard: "carpella sicca," but the latter statement is incompatible with Kirk's assertion, mentioned above. With regard to *R. assaortinus*, Chiovenda wrote: "drupeolae pericarpis succoso, glabro et sicco, nigro." If we compare the distinctly red fruits of *R. Adolphi-Friederici* in the herbarium (Tanganyika Territory, Njombe, 3 Dec. 1931, Lynes 21) with the equally developed, dark fruits of *R. exsuccus* also found there, we cannot but admit the possibility of there being a real specific difference, especially if the carpels in the latter were really found to be dry.

To bring all these variable characters into systematic order on the basis of dried herbarium specimens is indeed a difficult task. Definite information can be obtained only by the collection of good specimens with critical notes made in the field or by means of comparative cultures.

**Rubus apetalus** Poir. var. **roseus** C. E. Gust. var. nov. ; foliola magnitudine inaequalia ; illa infima parte infima petioli saepe longiora ; inflorescentia pyramidalis, aculeis parvis rubentibus armata ; petala rosea.

TANGANYIKA TERRITORY. Poroto Mountains near Mbeya, 2250 m., 18 Feb. 1934, *Michelmores* 965.

*Rubus Petitianus* A. Rich. In the Kew Herbarium are preserved *Schimper* 729, 731 and 733, mentioned by me in *Rubi Africani*, p. 31. Owing to the hairiness of these specimens, *R. Petitianus* has been placed in Subsect. *Villosi*, in spite of the fact that the petals are larger and have evidently a somewhat greater durability. In *Species Ruborum* 178 (1911) Focke considers that no. 733 is a "var. vel spec. div. *Schimperi*." No. 733 cannot be distinguished from nos. 729 and 731. They are more pilose than the type in the Paris Herbarium, but this may be due to their different habitats. Glands in the inflorescence are also found in the type.

*Rubus interjungens* C. E. Gust. With regard to this species collected by Rogers on the N. slopes of Mt. Kilimanjaro, 1950 m., 29 Nov. 1932, which is identical with the type, he has also supplied the following interesting note : "cane simple erect. Flower white. Petals fall at once." I presume, however, that the stem must be supported by adjacent bushes in order to be erect. In *Rubi Africani*, p. 32, I classified *R. interjungens* as an intermediate form between *R. apetalus* and *R. pinnatus* var. *afrotropicus*. Owing to the variation in Subsect. *Villosi* I must now admit that *R. interjungens* has hardly anything to do with *R. pinnatus*. On the other hand, there is in the herbarium a specimen of *R. pinnatus* var. *afrotropicus*, collected by A. Whyte in May, 1900, at Lubwas, Uganda, in which the indumentum of the axis closely resembles that of Subsect. *Villosi*.

Subsect. **Pinnati veri**.—Owing to the green undersides of the leaves and less hairiness the typical species of the group are not difficult to separate from those of other groups. Transitional forms, however, occur. Thus *R. Ledermanii* Engl., which has leaves of exactly the same shape as those of *R. pinnatus* Willd., has been referred to this group. It is, however, slightly more pilose, besides which the undersides of the leaves are somewhat greyish. This form, of which I have only seen one specimen from the Cameroons and one from the Belgian Congo, seems to be such a transitional form. Moreover, there are transitional forms between *R. intercurrents* C. E. Gust. and *R. rigidus* Sm. (*sensu amplo*).

*Rubus pinnatus* Willd. If one compares the type of *R. pinnatus* from the Cape with the variety *afrotropicus* Engl. from the equatorial



regions, it will be seen that the difference between them is considerable. It is, however, a difference in degree, not in kind. For instance, f. *glaber* C. E. Gust. from the Cape Province also has to a certain extent a pyramidal inflorescence, whereas slender branches of var. *afrotropicus* have narrower and smaller inflorescences.

As the habitat causes a variation in hairiness, the description (Rubi Africani, p. 45) of *R. pinnatus* Willd. must be corrected to:—Inflorescentia plus minus molliter tomentosa.

*R. pinnatus* Willd., Tanganyika Territory, Mbisi Mountains, Ufipa, 2100–2400 m., 1 Nov. 1933, *Michelmores* 712, varietas axi glabro, aculeis validis, carpellis parce tomentosus.

***Rubus pinnatus* Willd. forma subglandulosus C. E. Gust., forma nov. ; ramus floriferus aculeis sat validis armatus, in parte inferiore glaber ; inflorescentia glandulis subsessilibus parce obsita ; sepala viridia ; carpella glabra.** On the 12th January 1931 Major and Mrs. Lugard collected this form on Mt. Elgon, at an elevation of 1950 m. They have noted: “creeper to 20 ft. ; sepals green, petals suppressed. Fruit orange.” No tendency to produce glands has been observed before in *R. pinnatus*.

*Rubus pinnatus* Willd. var. *afrotropicus* Engl. On the 3rd January 1932, in the Morogoro District, Tanganyika Territory, at an altitude of 1350 m., Wallace collected a form which differs from the type only in having white petals and glabrous carpels. The native name is rufifi (Kiswahili).

*Rubus Stuhlmannii* Engl. Tanganyika Territory, Lukwanguli, Uluguru Mountains, 2400 m., 3 Jan. 1934, *Michelmores* 897. Note: “Leaves not white beneath, flowers white.” Var. ; axis quam pro typo magis tomentosus ; aculei minores ; foliola jugi infimi parte infima petioli saepe longiora.

*Rubus Stuhlmannii* Engl. var. *aberdarensis* C. E. Gust. The words “sepala post anthesin reflexa” in Rubi Africani, p. 43, should be changed to “sepala patula vel reflexa.” This species was collected by Grant (Forestry Department no. 1217) at Kinobop, Aberdare Mts., at an altitude of 2250 m., and he has supplied the following notes: “small pinkish petals, flowers in an inflorescence of from 30–60 approx. Fruit edible, colour from black to dark crimson, resembling European Blackberry in shape and colour.” In the herbarium there is also a specimen, Kenya Forestry Department, no. 750: “the common bramble of the Aberdare Mountains and Mt. Kenya, 2100–2700 m., vern. mutari, J. L. Moon, 21 July 1913.”

*Rubus Scheffleri* Engl. A duplicate of the type specimen from Limuru, Kenya Colony, is in the Kew Herbarium. There are also two specimens from Olomoti Volcano, Tanganyika Territory, 2490 m., 16 Sept. 1932, *B. D. Burtt* 4374. These are identical with *Fries* 729 from western Kenya, which I have rather doubtfully referred to *R. Scheffleri*. In comparing Burtt's specimens with the type I have not been able to see any essential difference.

It should also be mentioned that in the herbarium there is a specimen classified as *R. Scheffleri* Engl. (?) labelled Tanganyika Territory, Arusha district, Mt. Meru crater, 3450 m., 5 Oct. 1932, *B. D. Burt* 4152. It appears to have partly erect sepals, although it reminds one of *R. Scheffleri*.

*Rubus kingaensis* Engl. var *pubescens* C. E. Gust. Identical with this variety is the following specimen: Tanganyika Territory, Morogoro District, forest, 1350 m., 16 Oct. 1932, *G. B. Wallace* 161. "Climber. Fls. pink. Fruit edible. Kiswahili name: lufifi." It is perhaps intermediate between *R. kingaensis* Engl. and *R. rungwensis* Engl.

The same *Rubus* has been collected in Tanganyika Territory, Lupanga, Uluguru Mountains, forest edge, 1400 m., 23 Dec. 1933, *Micheltore* 848. Note: "Leaves green beneath, berries when unripe red, when ripe fair sized, black with grey bloom, very juicy and very good to eat. Kiluguru name: fifi." The description (*Rubi Africani*, p. 48), should be corrected thus: *Foliola supra paulum pilosa vel fere glabra, lateralia in jugo superiore sessilia vel fere sessilia*.

*R. rungwensis* Engl., Tanganyika Territory, above Chenzema, Uluguru Mountains, 2250 m., 2 Jan. 1934, *Micheltore* 876. Note: "In scrubby and probably secondary forest. A very ordinary looking bramble with pink flowers, leaves not white beneath, berries black when ripe." The description for this species (*Rubi Africani*, p. 49) should be emended thus: *Folia plus minus subtiliter duplicato-serrata, supra obscure viridia et pilosa, subtus magis pallida et pubescentia*.

Subsect. **Pauciflora**.—*Rubus kirungensis* Engl. In the herbarium there are two sheets: Uganda, Virunga Mts., 3150 m., 10 Dec. 1930, *B. D. Burt* 2874. The main form grows on lava high up on the mountain and may be regarded as a microphyllous form of *R. kirungensis* var. *glabrescens* (Engl.) C. E. Gust., growing on lower levels, which has leaves of normal size. The leaves of the main form are crenate-serrate. Fully developed petals are somewhat longer than or almost as long as the sepals.

***Rubus iringanus*** C. E. Gust. sp. nov.; a *R. kirungensi* Engl. ramis floriferis densius pilosis, foliis eorum non pinnatis, sepalis ad fructum adpressis, petalis albis differt.

*Frutex humilis. Turio non collectus. Axis rami floriferi teres usque obtusangulus, pilosus, probabiliter eglandulosus. Aculei parvi, inaequales, majores basi paulum dilatata saepissime curvati, aculeolis rectis immixti. Folia comparate parva, 3-nata, in inflorescentia singula simplicia, sat aequaliter serrata, supra obscure viridia et dense pilosa, subtus parum pallidiora et solum in nervis pubescentia. Foliolum terminale foliorum 3-natorum basi integra late ovatum vel late obovatum, breviter acutum vel fere obtusum, petiolulo suo dupl. longius vel fere aequilongum; lateralia parum*



petiolulata-sessilia, obtusa, basi plus minus cuneata, parte infima petioli longiora. *Petiolus* pilosus, aculeolis curvatis armatus. *Stipulae* ad basin petioli affixae, anguste lanceolatae. *Inflorescentia* foliosa, parva et pauciflora, floribus singulis et breviter pedicellatis ex axillis superioribus instructa. *Calyx* fere ad basin partitus. *Sepala* molliter tomentosa, sat longe acuminata, ad fructum adpressa. *Petala* parva, alba. *Stamina* stylos superantia. *Carpella* glabra. *Fructus* immaturi rosei.

TANGANYIKA TERRITORY, Kigogo Forest Reserve, Mufindi, Iringa District, 31 Jan. 1934, *Michelmores* 948.

Subsect. **Discolores apetalii**.—As mentioned before, *R. apetalus* should be placed in Subsect. *Villosi*. Since the petals of Subsect. *Rigidi veri* also are comparatively small and fall early, *R. madagascariensis* C. E. Gust. and *R. atrocoeruleus* C. E. Gust. may be placed in the same subsection thereto. The affinity of *R. Quartinianus* A. Rich to *R. rigidus* is on the other hand dubious.

*Rubus Quartinianus* A. Rich. In the herbarium there are specimens of Schimper 1439 from Lanka Berr in Abyssinia, mentioned in Rubi Africani, p. 52. There are also specimens of var. *Pappianus* C. E. Gust. Judging from the specimens I have seen, *R. Quartinianus* has a narrow and few-flowered inflorescence, but as the variety and its closely-related species, *R. Chiovendae* C. E. Gust., have been shown to have a wider and many-flowered inflorescence, that may possibly be the case also in this species.

*Rubus atrocoeruleus* C. E. Gust. A fully typical specimen is preserved in the herbarium: Zambezia [Nyasaland], Shibisa to Tshinmuzi, 600-1200 m., Sept. 1859, *Dr. Kirk*. A specimen collected by *Scott-Elliot* (no. 8552) in Nyasaland, Shire Highlands, Ndirani, seems to belong to this species, as does also a specimen from S. Rhodesia, Chimanimani Mts., 24 Febr. 1907, *Johnson* 215. The latter is said to have "fruits black." It is difficult to distinguish *R. atrocoeruleus* from certain variations of *R. inedulius* Rolfe. The ripe fruits of the former, however, are "atrocoerulei" (Fries), whereas those of the latter are "lutei" (Rolfe) or "aurantiacobrubri" (Fries, Stolz).

Subsect. **Rigidi veri**.—*Rubus transvaliensis* C. E. Gust. should scarcely be placed in this subsection, but I cannot think of a more appropriate classification. The type of var. *kyimbilensis* C. E. Gust. is preserved in the herbarium (13 Nov. 1913, *Stolz* 2286) and a description is given in Bull. Jard. Bot. Bruxelles, **13**, 275 (1935).

*Rubus rigidus* Sm. Through the courtesy of the Linnean Society of London I obtained a photograph of the type specimen from the Cape preserved in the Linnean Herbarium. This photograph and the accompanying description furnished me with quite a clear picture of its habit. *R. rigidus* Sm. very closely resembles the type of *R. inedulius* Rolfe. I am afraid, however, that a complete and correct analysis of the numerous varieties of *R. rigidus* Sm. (*sensu amplo*) can be made only by means of a comparison in the field of

the variations of the bushes. For it is sometimes difficult to judge whether varying characters in herbarium specimens occur on a single plant, or on different specimens.

In the herbarium there is a specimen labelled *R. rigidus* Sm., which was collected by G. Adamson in the Shire Highlands, Nyasaland. In this specimen some of the fruits are hairy, while others are glabrous. It might just as correctly have been named *R. inedulis* Rolfe.

*Rubus rigidus* Sm. forma *lachnocarpus* C. E. Gust. is a slightly prickly form of *R. rigidus* with pubescent carpels and predominantly trifoliate leaves. The following specimen in the herbarium resembles the type: Southern Rhodesia, Odzani River Valley, distr. Manica, div. Umtali, 1914, *A. J. Teague* 195. Little different from it is another specimen, also collected in Southern Rhodesia, Chipinga, which is furnished with the following note: "Flowers small, reddish. Berries ripening red and then black." A similar note is found on a specimen from Mozambique.

*Rubus rigidus* Sm. var. *Mundtii* (Cham. et Schldl.) Focke. In the herbarium there is a specimen devoid of petals: Kenya, N'dara-Berg in Taita, Febr. 1877, *J. M. Hildebrandt* 2461. It resembles *R. madagascariensis*, but differs in having a furrowed axis in the inflorescence and a deeper serration of the leaves.

*Rubus rigidus* Sm. var. *incisus* C. E. Gust. is characterised by its comparatively long sepals. In the herbarium there are two specimens of this plant from Southern Rhodesia, collected by Michelmores, one from Chipinga, the other from Melssetter between Jansen's Hill and Lemonkop. The following note is given: "petals red of moderate size. Growth stiff." The leaves, however, are not so deeply serrate as in the type specimen.

*Rubus rigidus* Sm. var. *huillensis* (Welw. ex Oliv.) Focke. The type in the Kew Herbarium bears the following note: "Welwitsch, Iter Angolense n. 1281 (*Huillensis* ad int.). Distr. Huilla, Juxta rip. rivor. ad 4500 ped. usque 5600. c. fl. et fr. Nov. 1859. Frutex 3-5 ped. altus, laxe ramosus. Fructus edulis quidem est parum succosus, atropurpureus."

*Rubus intercurrents* C. E. Gust., like *R. Ledermannii* Engl., has the same shape of leaf as *R. pinnatus*, but the undersides of the leaves are more or less grey-felted. *R. intercurrents* C. E. Gust. var. *confluens* has a pyramidal inflorescence like *R. pinnatus* var. *afrotropicus*, but grey-felted leaves like *R. rigidus*. A specimen of this plant, no. 454, was collected by C. F. Swynnerton in Southern Rhodesia near Chirinda, 1140 m., and bears the following note: "a bramble with pink flowers and red fruits." In 1891 *J. Buchanan* collected the same *Rubus* in Nyasaland.

*Rubus inedulis* Rolfe. In the Kew Herbarium Brown's specimen (*Rubi Africani*, p. 63) is marked as the type and Dawe's specimen as the co-type. The former has a stronger tendency to pinnate leaves and its inflorescence does not reach so far above the leaves;



the co-type, which seems to be common, has mainly trifoliate leaves in the inflorescence, which reaches far beyond the leaves. With regard to his specimen Brown has supplied the following note : "fruit inedible, yellow." As some collectors state that the fruits are yellow, others that they are reddish, one must suppose that the colour changes from yellow to reddish on ripening. In contradistinction to this it should be observed that the fruits of other forms of *R. rigidus* are clearly stated to be red and then become black or at least dark red. *R. chrysocarpus* Mundt, however, is supposed also to have yellow fruits.

With regard to the edibility of the fruits there seems to be a difference of opinion. The abnormally well-developed fruits may no doubt be eaten but they have a sour and bitter taste. At any rate abnormal fruits frequently occur concerning which the author says : "the fruits appear to be in abnormal condition, the receptacle and achenes being swollen into a spongy densely tomentose mass. It is suspected to be a galled condition." It is remarkable that these malformations occur in *R. inedulius* from Kenya, Uganda and Belgian Congo right down to Southern Rhodesia, that is, from latitude 0° to 20°S., whereas I cannot remember having seen such malformations in any other species of *Rubus* there. *R. inedulius* is said to grow in shrubs near cultivated places and on savannahs.

I am greatly indebted to the authorities at Kew for facilitating my difficult studies of the variation of African *Rubus* by supplying me with extensive material.

### XXX—A SYNOPSIS OF THE LABIATAE OF THE GUIANAS. CARL EPLING.

The *Labiatae* of the Guianas are largely weedy in nature, being mostly plants of wide distribution in the tropics at least of the New World. Three genera, *Leonurus*, *Leonotis* and *Coleus*, are introduced from the Old World. The remaining three genera are American but none of their species is confined to the Guianas. Of these only *Hyptis* embraces species of significant distribution. They are three in number : *H. laciniata*, unique in laciniate leaves, *H. arborea*, almost unique amongst *Labiatae* in tree-like habit, and *H. dilatata*.

#### LEONURUS L.

##### 1. *L. sibiricus* L. Sp. Pl. 584 (1753).

A widely distributed tropical weed.

#### LEONOTIS R. BR.

##### 1. *L. nepetaefolia* (L.) R. Br. Prodr. 504 (1810).

A widely distributed tropical weed.

#### MARSYPIANTHES MART.

1. *M. Chamaedrys* (Vahl) Kuntze, Rev. Gen. 524 (1891).—*Clinopodium Chamaedrys* Vahl, Symb. 3, 77 (1794). *Marsypianthes hyptioides* Mart. ex Benth. Lab. Gen. et Sp. 64 (1832) et in DC. Prodr.

12, 84 (1848). *M. viscosa* Klotzsch in Schomb. Fl. Br. Guian. 1148 (1848). *H. Chamaedrys* Willd. Sp. Pl. 3, 85 (1800). *H. pseudo-chamaedrys* Poit. in Ann. Mus. Par. 7, 469, t. 31, f. 1 (1806). *H. inflata* Spreng. Syst. Veg. 2, 731 (1825). *H. lurida* Spreng. Syst. Veg. 2, 731 (1825). *M. hyptoides* var. *bracteosa*, *umbrosa*, *eriocephala* et *arenosa* Benth. in DC. Prodr. 12, 85 (1848).

Widely distributed in the American tropics from Mexico to Paraguay. A species of considerable variability, the variants of which seemingly have no correlated distribution. *M. hyptoides* var. *bracteosa* Benth. is unique in the ovate bracts. I have seen no other specimens comparable. *M. hyptoides* var. *umbrosa* Benth. is a large-leaved form in which the calyx teeth are often long-acuminate; it passes into *M. hyptoides* var. *eriocephala* Benth. in which the calyx teeth are long-acuminate and very woolly, but in which the leaves are smaller. *M. hyptoides* var. *arenosa* Benth. is a viscid form with small leaves, often thickish, the heads being short-peduncled, the whole plant often sordid with particles of earth or sand which cling to it. Two of these variants may often grow in the same locality. To what extent the differences are environmental and to what extent racial is too complex a question to determine from herbarium specimens.

#### COLEUS LOUR.

##### 1. *C. Blumei* Benth. Lab. Gen. et Sp. 56 (1832).

Found frequently in the tropics, apparently as an escape. The species is apparently a garden form of mixed parentage.

#### OCIMUM L.

Posterior stamens appendaged near the base :

A shrub as much as 2 m. tall; upper calyx tooth shortly decurrent on the tube, the lower pair connate nearly to the apex, the tube naked within..... 1. *O. gratissimum*

Annual herbs; upper calyx tooth decurrent to the base of the tube, concave and cordate at maturity, the lower pair nearly free; tube hirsute within; corolla 7-8 mm. long..... 2. *O. Basilicum*

Posterior stamens naked or pilose at the base, hardly appendaged :

Upper calyx tooth decurrent along the tube to its base, 7-8 mm. long; corolla 3-4 mm. long ..... 3. *O. micranthum*

Upper calyx tooth shortly decurrent on the tube, 2.5 mm. in diameter at maturity; corolla 3-4 mm. long..... 4. *O. sanctum*

##### 1. *O. gratissimum* L. Sp. Pl. 1197 (1753).

Frequently collected in the tropics, its nativity being uncertain. A pubescent form very similar to this species but more commonly



collected in the old world tropics is known as *O. gratissimum* var. *hirsutum* Wawra, or as *O. suave* Willd. I am uncertain of its relation to this species.

**2. *O. Basilicum* L. Sp. Pl. 597 (1753).**

Frequently collected in the tropics, often, if not always, as an escape from cultivation.

**3. *O. micranthum* Willd. Enum. Hort. Berol. 630 (1809).**

A common weed in the American tropics.

**4. *O. sanctum* L. Mant. 85 (1767).**

An occasional weed in the American tropics.

HYPTIS JACQ.

**Hyptis** Jacq. (nomen conservandum) Coll. **1**, 101 (1786).—*Mesosphærum* P. Br. Hist. Jamaic. 257, t. 18, f. 3 (1756). *Brotera* Spreng. in Trans. Linn. Soc. **6**, 151, t. 12 (1802). *Hypothronia* Schrank in Syll. Ratisb. **1**, 85 (1824). *Hippothronia* Benth. Lab. 130 (1833), nomen. *Gnoteris* Raf., Sylva Tellur. 76 (1838). *Siagonarrhen* Mart. ex J. A. Schmidt in Mart. Flora Brasil. **8**, 146 (1856), nomen. *Schaueria* Hassk. in Flora, **25**, II Beibl., 25 (1842).

A. Herbs, either procumbent or prostrate and often rooting at the nodes, or if erect, usually less than 60 cm. tall, with several stems arising from the base; flowers in dense capitula; leaves mostly sessile or subsessile:

Leaves pinnately dissected..... **6. *H. laciniata***

Leaves simple, crenate or serrate:

Calyx teeth deltoid, obtuse..... **14. *H. Parkeri***

Calyx teeth subulate or aristate:

Calyx tube pilose-annulate within and without, the annulus about midway of the mature tube ..... **15. *H. lantanaefolia***

Calyx tubes hirtellous but hardly annulate, often pilose without at the base:

Leaves truncate-rounded and somewhat dilated at the base; style branches almost obsolete, united into a small capitulum ..... **10. *H. dilatata***

Leaves cuneately narrowed at the base; style branches apparent, plane:

Bracts ovate; plant prostrate, creeping..... **16. *H. atrorubens***

Bracts lanceolate; plant erect, often as much as a metre tall:

- Leaves glabrous on the upper surface, hirtellous on the veins beneath; calyx teeth mostly 1-1.5 mm. long..... 12. *H. lanceolata*
- Leaves sparsely and evenly villous-hirsute on both surfaces, thinner than in the preceding; calyx teeth mostly 1.5-2.5 mm. long, sharper than in the preceding 13. *H. brevipes*
- AA. Shrubs or tall herbs, one species a tree :  
 Flowers solitary or few in loose cymules, disposed in loose showy panicles :  
 Flowers in cymules, disposed in leafy panicles; a tree to 15 m., its leaves rough and leathery ..... 1. *H. arborea*  
 Flowers in diffuse nearly naked panicles; a tall herb with soft leaves ..... 2. *H. Salzmanni*
- Flowers in congested cymules, sometimes pectinate and branching, or in compact capitula :  
 Calyces abruptly recurved near the throat at maturity :  
 Leaves 1-2.5 cm. long, softly hirsute, even silky :  
 Leaves ovate, rounded-cuneate at the base; mature capitula 9-10 mm. in diameter on peduncles 1.5-2 cm. long ..... 7. *H. paludosa*  
 Leaves obovate, cuneate below the middle; mature capitula 5-6 mm. in diameter on peduncles 7-15 mm. long..... 8. *H. microphylla*  
 Leaves 3-9 cm. long, hirsute-villous... 9. *H. recurvata*
- Calyces straight, not recurved :  
 Flowers few in loose cymules or, if more numerous, the cymules forking and pectinate :  
 Bracts erect, sheathing the flowers; calyx teeth 1-1.5 mm. long ... 5. *H. mutabilis*  
 Bracts inconspicuous, aristate :  
 Calyx teeth 1-1.5 mm. long..... 3. *H. pectinata*  
 Calyx teeth 2-3 mm. long..... 4. *H. suaveolens*
- Flowers many in dense capitula, subtended by an involucre of spreading lanceolate bracts :  
 Capitula sessile or nearly so; calyx teeth 3.5-5 mm. long ..... 11. *H. hirsuta*



Capitula on peduncles mostly 0.5-3.5 cm. long, rarely less ; calyx teeth 1-2.5 mm. long ;

Leaves glabrous on the upper surfaces, hirtellous on the veins beneath ; calyx teeth mostly 1-1.5 mm. long.....

12. *H. lanceolata*

Leaves sparsely but evenly villous-hirsute on both surfaces, thinner than in the preceding ; calyx teeth mostly 1.5-2.5 mm. long ...

13. *H. brevipes*

**1. *H. (Buddleioides) arborea* Benth.** in DC. Prodr. **12**, 132 (1848).—*Mesosphaerum arboreum* Kuntze, Rev. Gen. **2**, 526 (1891), nomen. *M. arboreum* var. *bracteosum* Rusby in Mem. Torr. Bot. Cl. **6**, 107 (1896). *H. arborea* subsp. *guianensis* Briq. in Ann. Conserv. et Jard. Bot. Genève, **2**, 199 (1898). *H. arborea* subsp. *bracteosa* Briq., loc. cit.

A large shrub or small tree as much as 15 m. tall, its trunk as much as 10 cm. in diameter, its bark grey and shallowly fissured, its branchlets nearly terete and rufo-floccose ; leaf-blades 8-20 cm. long, 3.5-7 cm. broad, usually elliptical, less often rounded at the base and ovate, their margins obscurely crenulate, the upper surface rough and shining, the lower densely rufo-tomentellous with branched hairs, borne on petioles 1-3 cm. long, those of the fertile branchlets commonly reduced in size, obovate and silvery ; flowers in lax branching cymules subtended by linear incanous bracts 4-5 mm. long, disposed in leafy erect panicles on peduncles 1.5-4 cm. long ; calyces incanous, floccose-tomentose, 5-7 mm. long at anthesis, their teeth deltoid-acuminate, 2-2.5 mm. long, the orifice somewhat oblique, the tube 6-8 mm. long at maturity ; corolla blue, its tube 10-11 mm. long ; filaments villous, seated in the throat ; columella of the gynobase surpassing the ovules ; nutlets complanate, 4 mm. long, 1.5 mm. broad, winged.

BR. GUIANA : Rio Arapoo near Mt. Roraima ; in Kotinga valley near Mowaimata ; near Arobupu, 1260 m. ; in Paramacutoi savanna, 750 m.

Known also from Bolivia (Santa Cruz) and Colombia (Antioquia). I can find no greater morphological variation between the plants of Guiana, Colombia and Bolivia than might be expected upon an individual.

**2. *H. (Hypenia) Salzmanni* Benth.** Lab. Gen. et Sp. 138 (1833), et in DC. Prodr. **12**, 137 (1848).—*H. Salzmanni* var. *filipes* Benth. in DC. Prodr. **12**, 137 (1848). *Mesosphaerum Salzmanni* Kuntze, Rev. Gen. **2**, 527 (1891), nomen.

A perennial herb as much as 2 m. tall, its branches slender and usually densely pilose ; leaf-blades 1.5-2.5 cm. long, 8-12 mm. broad,

deltoid-ovate, obtuse, rounded at the base, irregularly crenate, the upper surfaces hirsute with short hairs and sprinkled with a few longer ones, glandular, the lower ashy, subtomentose, borne on petioles 3–8 mm. long; flowers in glabrous glaucous panicles with internodes 5–10 cm. long, the lower branchlets often foliose, subtended by ovate-lanceolate bracts 2–3 mm. long, borne on slender glabrous pedicels 0.5–3 cm. long; calyces hirtellous, 2.5 mm. long at anthesis, their teeth deltoid-lanceolate, acute, their tubes globose-campanulate at maturity, 4 mm. long, the teeth 1–1.5 mm. long; corolla tubes 5–6 mm. long.

Collected by Schomburgk, without locality; ranges from Venezuela (Bolivar) to Brasil (Minas Geraes).

**3. H. (Mesosphaeria) pectinata** (L.) Poit. in Ann. Mus. Par. **7**, 474, t. 30 (1806).—*Nepeta pectinata* L. Syst., ed. 10, 1096 (1759). *Brotera persica* Spreng. in Trans. Linn. Soc. **6**, 151 t. 12 (1802). *H. nepetoides* Fisch. ex Schrank in Bot. Ges. Regensb. **2**, 52 (1822). *Mesosphaerum pectinatum* Kuntze, Rev. Gen. **2**, 525 (1891), nomen.

Widely distributed throughout the American tropics.

**4. H. (Mesosphaeria) suaveolens** (L.) Poit. in Ann. Mus. Par. **7**, 472, t. 29, f. 2 (1806).—*Ballota suaveolens* L., Syst. ed. 10, 1100 (1759) et Pl. Jam. Pugill, 15 (1759). *H. Plumieri* Poit. in Ann. Mus. Par. **7**, 473 (1806). *Schaueria graveolens* Hassk. in Flora **25**, II Beibl. 25 (1842). *Mesosphaerum suaveolens* Kuntze, Rev. Gen. **2**, 525 (1891), nomen. *H. congesta* Leonard in Journ. Wash. Acad. Sci. **17**, 70 (1927).

Widely distributed through the tropics.

**5. H. (Mesosphaeria) mutabilis** (L. C. Rich.) Briq. in Bull. Herb. Boiss. **4**, 788 (1896).—*Nepeta mutabilis* L. C. Rich. in Actes de la Soc. Hist. Nat. de Par. 110 (1792). *Mesosphaerum mutabile* Kuntze, Rev. Gen. **2**, 525 (1891), nomen.

Widely distributed in the tropics in one form or another as indicated below; that of the Guianas is mostly var. *spicata*:

var. **spicata** (Poit.) Briq. in Bull. Herb. Boiss. **4**, 788 (1896).—*H. spicata* Poit. in Ann. Mus. Par. **7**, 474, t. 28, f. 2 (1806). *H. rostrata* Salzm. ex Benth. Lab. Gen. et Sp. 121 (1833). *H. tenuiflora* Benth. Lab. Gen. et Sp. 121 (1833) et in DC. Prodr. **12**, 122 (1848). *H. spicata* var. *rostrata* Benth. in DC. Prodr. **12**, 122 (1848). *H. mutabilis* var. *rostrata* Briq. in Engler u. Prantl, Nat. Pflanzenf. ed. 1, **4**, 3a, 339 (1897). *M. spicatum* Rusby in Bull. Torrey Bot. Cl. **27**, 83 (1900). *H. singularis* Glaziou in Bull. Soc. Bot. France **58**, Mém. III, 554 (1911), nomen.

Stems either glabrate or villous; lower leaf-surfaces *now glabrous, now pubescent*, hardly tomentose; verticillasters borne on slender peduncles 2–5 mm. long, disposed in slender, diffuse panicles; mature calyx tubes 4–6 mm. long, the teeth hardly longer than the diameter of the tube.



var. **canescens** (HBK.) Briq. in Bull. Herb. Boiss. **4**, 788 (1896).—*H. canescens* Kunth in Humboldt et Bonpland, Voy., Nov. Gen. et Sp. **2**, 321 (1817). *H. barbata* Schrank in Denkschr. Bot. Gesell. Regensb. **2**, 52 (1822). *H. micrantha* Pohl ex Benth. Lab. Gen. et Sp. 120 (1833). *H. polystachya* var. *longiflora* Benth. Lab. Gen. et Sp. 120 (1833). *H. spicata* var. *micrantha* Benth. in DC. Prodr. **12**, 122 (1848). *M. canescens* et *barbatum* Kuntze, Rev. Gen. **2**, 526 (1891), nomina. *H. trichocalyx* Briq. ex Micheli in Mém. Soc. Phys. Hist. Nat. Genève, **32**, 10, 21 (1897). *H. spicata* var. *Bromfieldi* Benth. in DC. Prodr. **12**, 122 (1848). *H. mutabilis* var. *Bromfieldi* Briq. in Engler u. Prantl, Nat. Pflanzenf. ed. 1, **4**, 3a, 339 (1897). *H. mutabilis* var. *micrantha* Briq. in Engler u. Prantl, Nat. Pflanzenf. ed. 1, **4**, 3a, 339 (1897). *M. yungasense* Britton ex Rusby in Mem. Torrey Cl. **4**, 246 (1895). *H. canaminensis* Rusby in Mem. N.Y. Bot. Gard. **7**, 342 (1927).

Stems usually pubescent ; leaf-blades usually truncate or even subcordate at the base, the lower surface *canescent-tomentose* ; verticils rather crowded, disposed in rather strict panicles ; mature calyx tubes 3–4 mm. long, the teeth scarcely longer than the diameter of the tube.

var. **polystachya** (HBK.) Briq. in Engler u. Prantl, Nat. Pflanzenf. ed. 1, **4**, 3a, 339 (1897).—*H. polystachya* Kunth in Humboldt et Bonpland, Voy., Nov. Gen. et Sp. **2**, 321 (1817). *H. aspera* Mart. et Gal. in Bull. Herb. Acad. Brux. **11**, II. 189 (1844). *H. mutabilis* var. *cuneata* Briq. in Ann. Conserv. et Jard. Bot. Genève **2**, 209 (1898). *Mesosphaerum polystachyum* Cook et Collins in Contrib. U. S. Nat. Herb. **8**, 191 (1903).

Stems *scabro-villous* ; lower leaf-surfaces either pubescent or villous, scarcely tomentose ; verticils borne on slender peduncles 2–5 mm. long, disposed in *ample, many-flowered* panicles ; bracts usually *purple* ; mature calyx tubes about 4 mm. long, their teeth 1–1.2 mm. long, setaceous.

var. **pavoniana** Briq. in Ann. Conserv. et Jardin Bot. Genève **2**, 208 (1898).—*H. canescens* var. *arvensis* Benth., Lab. Gen. et Sp. 712 (1835).

Stems shortly villous, *strict* ; uppermost leaf-blades (all available) *rhomboid-ovate, cuneate* at base, the lower surface *canescent* ; panicles rather *crowded*, *strict*, narrow ; mature calyx tube about 4 mm. long.

**6. *H. (Plagiotis) laciniata* Benth.** in Hooker's Journ. of Bot. **2**, 49 (1840).—*Mesosphaerum laciniatum* Kuntze, Rev. Gen. **2**, 526 (1891), nomen.

A small tender glabrous herb, procumbent or prostrate, its slender branches 15–30 cm. long, apparently creeping in mud and water ; leaves singular in the genus, pinnately dissected, 1.5–2 cm. long, ovate, the laciniae 9–11, incised-dentate, the ultimate lobes

1–2 mm. long, obtuse, the sinuses rounded and excavated, forming lacunae 3 mm. long near the mid-vein, petioles 0.5–1 cm. long; flowers 10–40 in small axillary capitula, borne on peduncles 2–2.5 cm. long; calyx tube 1.2–1.5 mm. long at anthesis, the orifice strongly oblique, the teeth lanceolate-setaceous, 0.4–0.6 mm. long, unchanged at maturity, the tube then 3 mm. long, decurved near the throat; corolla tubes 2 mm. long.

BR. GUIANA: In dry campo near Mt. Pacaraima; known also from a locality in Colombia on the upper Orinoco.

**7. *H. (Cyrta) paludosa* St. Hil. ex Benth.** Lab. Gen. et Sp. 82 (1833) et in DC. Prodr. **12**, 90 (1848).—*Mesosphaerum paludosum* Kuntze, Rev. Gen. **2**, 526 (1891), nomen.

A canescent herb of swampy places, a metre tall or more, with quadrate canescent-villous branches, somewhat silky; leaf-blades 1–2.5, cm. long, 0.6–1.5 cm. broad, ovate, rather acute, cuneately narrowed at the base, the upper surface canescent-villous and glandular, the lower white, silky, their margins serrulate, petioles 1–3 mm. long, silky; flowers in globose capitula 9–10 mm. in diameter at maturity, disposed in ample foliose panicles, borne on silky peduncles 1.5–2.5 cm. long; flowering calyces 2.5 mm. long, their linear teeth equal to the tube, unchanged at maturity, the tubes then 4 mm. long, abruptly and strongly recurved at the throat, somewhat villous above the middle; corollas scarcely 3 mm. long.

Collected in Br. Guiana by Schomburgk. Occurs principally in Brasil (Rio Janeiro, Matto Grosso).

**8. *H. (Cyrta) microphylla* Pohl ex Benth.**, Lab. Gen. et Sp. 82 (1833) et in DC. Prodr. **12**, 90 (1848).—*Mesosphaerum microphyllum* Kuntze, Rev. Gen. **2**, 526 (1891). *H. inundata* Hertzog in Fedde, Rep. **7**, 66 (1909). *Mesosphaerum capitellatum* (etiam *H. capitellata*) Jenn. in Ann. Carn. Mus. **11**, 246 (1917).

Reported by Kostermans (Pulle, Fl. Surin. **4**, 342 (1936)) from Paramaribo, Dutch Guiana, based upon Wullschlägel n. 398, a specimen of which I have no record. It is to be expected.

**9. *H. (Cyrta) recurvata* Poit.** in Ann. Mus. Par. **7**, 467, t. 28, f. 2 (1806).—*H. recurvata* var. *hirsutior* et *grandifolia* Benth. Lab. Gen. et Sp. 81 (1833). *H. microcephala* Bert. ex Benth. Lab. Gen. et Sp. 81 (1833), nomen. *Mesosphaerum recurvatum* Kuntze, Rev. Gen. **2**, 527 (1891), nomen.

Frequent throughout the American tropics.

**10. *H. (Eriosphaeria) dilatata* Benth.** in DC. Prodr. **12**, 103 (1848).—*H. crenata* var. *angustifolia* Benth. ex Seem. Bot. Voy. Herald, 187 (1852–7). *Mesosphaerum dilatatum* Kuntze, Rev. Gen. **2**, 526 (1891), nomen.

Perennial aromatic herbs 30–50 cm. tall, their stems more or less decumbent, glandular-villous, the lower internodes scarcely 1 cm. long, the upper 2–2.5 cm. long; leaf-blades sessile, oblong,



1.5–3 cm. long, 6–14 mm. broad, the upper tending to ovate, all obtuse, truncate-rounded and often abruptly somewhat dilated at the base, their margins subrevolute, crenate, the upper surfaces appressed-villous, the lower ashy, villous-tomentose; capitula hemisphaeric, 1.5–2 cm. in diameter at maturity, subtended by recurved bracts 5–7 mm. long, disposed in the upper axils on villous peduncles 1–3 cm. long; tube of the flowering calyx 2–2.5 mm. long, its teeth about 2 mm. long, lanceolate-acuminate, the tube 3.5–4 mm. long at maturity; corolla tube 6–6.5 mm. long.

BR. GUIANA: on Mt. Tonpaëging, Rio Negro; occurs also in Colombia (Meta), Venezuela (Carabobo, Amazonas) and Brasil (Espiritu Santo, Goyaz, Matto Grosso).

**11. *H. (Xylodontes) hirsuta* Kunth** in Humboldt et Bonpland, Voy., Nov. Gen. et Sp. Pl. **2**, 318, t. 161 (1817).—*Mesosphaerum hirsutum* Kuntze, Rev. Gen. **2**, 526 (1891), nomen. ? *H. siderotricha* Briq. in Bull. Herb. Boiss. **4**, 791 (1896). *M. siderotrichum* Briq., loc. cit., nomen.

BR. GUIANA: Upata, Guacaima; occurs elsewhere in South America from Venezuela to Paraguay at lower elevations.

**12. *H. (Cephalohyptis) lanceolata* Poir.** Encyl. Suppl. **3**, 114 (1813)—*H. globifera* G. F. W. Meyer, Prim. Fl. Esseq. 207 (1818). *H. lanceifolia* Thonn. ex Schum. et Thonn., Beskr. Guin. Pl. 261 (1827). *H. brevipes* var. *glabrior* Benth. in DC. Prodr. **12**, 107 (1848.) *Mesosphaerum lanceolatum* Kuntze, Rev. Gen. **2**, 526 (1891), nomen. *H. brevipes* var. *remotidens* Briq. in Ann. Conserv. et Jardin Bot. Genève, **2**, 226 (1898). *H. brevipes* var. *lanceifolia* Briq., loc. cit.

Apparently a native of Guiana, this species is widely distributed throughout Africa, never appearing, however, in the Malaysian Archipelago or in Mexico or Cuba. In Bahia forms apparently intermediate with *H. brevipes* occur. Otherwise it maintains its identity as here described. Specimens from the Mazaruni River collected by de la Cruz have uniformly smaller calyces and capitula but seem otherwise hardly different. The size and shape of leaf may vary greatly, even on the same plant. *H. brevipes* var.  $\beta$  of Bentham, based upon a fragmentary specimen collected by Schomburgk on the upper Rupununi, is apparently referable here. The capitula are nearly sessile and the calyx teeth are longer, more acute and more rigid.

**13. *H. (Cephalohyptis) brevipes* Poit.** in Ann. Mus. Par. **7**, 465 (1806).—*H. acuta* Benth. in Linnaea, **6**, 82 (1831). *Thymus biserratus* Blanco, Fl. Filip. 478 (1837). *Pycnanthemum subulatum* Blanco, Fl. Filip. ed. **2**, 333 (1845), et ed. **3**, **2**, 251, t. 204 (1878). *H. melanosticta* Griseb. Fl. Br. W. Ind. 458 (1861). *Mesosphaerum brevipes* et *melanostictum* Kuntze, Rev. Gen. **2**, 526 (1891), nomina. *H. brevipes* var. *serrata* Briq. in Ann. Conserv. et Jard. Bot. Genève, **2**, 226 (1898).

*H. brevipes* is apparently a native of the region of northern lowland Brasil and the Guianas. It is widely distributed throughout northern South America except in those regions occupied by *H. lanceolata*, with which it seemingly comes in contact in one place only, in Bahia, where intermediates occur. Outside South America it occurs widely in the Caribbean Islands, in Central America and Mexico and throughout Malaysia, occurring even in China.

**14. *H. (Cephalohyptis) Parkeri* Benth.** Lab. Gen. et Sp. 108 (1833) et in DC. Prodr. 12, 108 (1848).—*Mesosphaerum Parkeri* Kuntze, Rev. Gen. 2, 525 (1891), nomen. *H. juruana* Loesn. ex Pilger in Verh. Bot. Ver. Brandenb. 47, 187 (1905).

A perennial herb of varied aspect, apparently scrambling over other vegetation or prostrate, its stems slender, as much as a half metre long, with internodes 3–6 cm. long; leaves nearly sessile, 4–6 cm. long, glabrous or hirtellous, elliptical-lanceolate or elliptical, rather obtuse at the apex, narrowly rounded-truncate at the base, the margins convex, serrate; mature capitula hemisphaerical, about 8 mm. in diameter, borne on slender hirsute peduncles 4–5 cm. long, subtended by ovate-oblong bracts 5–7 mm. long; flowering calyces turbinate-campanulate, 3–3.5 mm. long, their teeth scarcely 1 mm. long, deltoid-ovate, obtuse, the anterior pair somewhat smaller, the tube 3.5 mm. long at maturity; corolla white; nutlets truncate.

Frequently collected in the Guianas and in Brasil (Amazonas, Matto Grosso).

var ***verbenaefolia* (Mart. ex Schmidt) Epl.** in Bull. Torrey Bot. Cl. 58, 465 (1931).—*H. verbenaefolia* Mart. ex Schmidt in Mart. Flora Brasil. 8, 110 (1858). *Mesosphaerum verbenaefolium* Kuntze, Rev. Gen. 2, 527 (1891), nomen.

Leaves mostly elliptical, acute, more or less hirsute.

BR. GUIANA: near Georgetown and doubtless elsewhere; frequent also in Brasil (Pará, Amazonas).

**15. *H. (Cephalohyptis) lantanaefolia* Poit.** in Ann. Mus. Par. 7, 468, t. 29, f. 1 (1806).—*H. lantanaefolia* var. *glabra* Kosterm. in Pulle, Fl. Surin. 4, 349 (1936). *Mesosphaerum lantanaefolium* Kuntze, Rev. Gen. 2, 525 (1891), nomen.

Widely distributed in the American tropics from southern Mexico to eastern Bolivia.

**16. *H. (Pusillae) atrorubens* Poit.** in Ann. Mus. Par. 7, 466, t. 27, f. 3 (1806).—*Mesosphaerum atrorubens* Kuntze, Rev. Gen. 2, 525 (1891), nomen. *H. procumbens* Cham. et Schlecht. in Linnaea, 5, 101 (1830). *H. pascuorum* Mart. ex Schmidt in Mart. Fl. Brasil, 8, 118 (1868), nomen. *H. tenella* Briq. et Spruce in Ann. Conserv. et Jard. Bot. Genève, 2, 223 (1898). *M. tenellum* Briq., loc. cit., nomen.

Throughout the tropical lowlands in North and South America; a form which may be endemic occurs also in Africa in Senegambia and Sierra Leone.



**XXXI—TWO NEW SPECIES OF *SENECIO* FROM ARGENTINA.** ANGEL L. CABRERA (Museo de la Plata, Argentina).

Among Mr. H. F. Comber's botanical collections made in Neuquen Territory of the Argentine Republic, which corresponds to N.W. Patagonia, there are two interesting, and as yet undescribed, species of the genus *Senecio*. Thanks to the courtesy of Sir Arthur W. Hill I have been given the opportunity of studying these plants, which are here described. The type specimens are preserved in the Herbarium of the Royal Botanic Gardens, Kew.

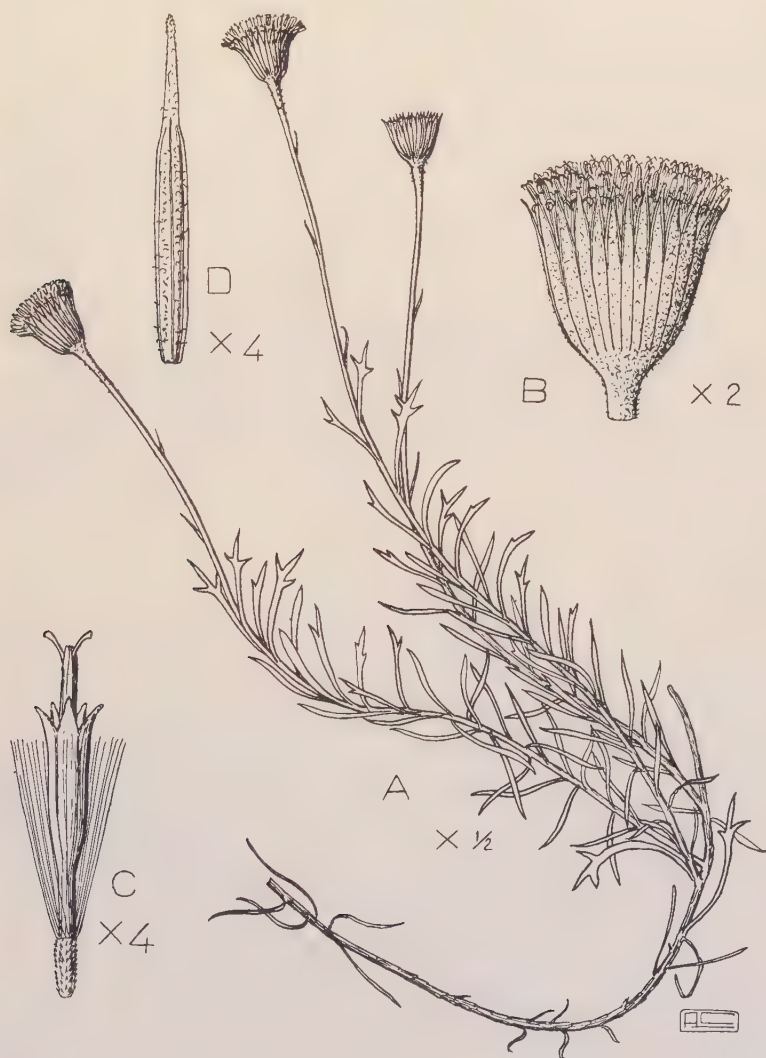


Fig. 1. *Senecio Comberi* Cabr. A, entire plant; B, head; C, floret; D, involucre bract.

**Senecio Comberi** Cabrera, sp. nov.; affinis *S. maulino* Reiche, sed foliis linearibus differt. Proximus etiam ad *S. leucophyton* Phil. et *S. gilvum* Phil., sed achaeniis pilosis et bracteis involucribus 20–23 distinctus.

*Suffrutex*, 20–25 cm. elatus, caulibus ascendentibus basi ramosis cylindratis plus minus dense tomentosus inferne foliosis superne nudis monocephalis. *Folia* densa, linearia vel oblanceolata-linearia, acuta, apice mucronata, basi attenuata, integra vel ad partem superiorem 1–3 lobulis acutis munita, utrinque plus minus dense argenteo-tomentosa, margine leviter revoluta, 15–30 mm. longa, 1–3 mm. lata (lobulata usque ad 7 mm. lata). *Capitula* discoidea. *Involucrum* campanulatum, ecalyculatum, 11 mm. elatum, 13–15 mm. crassum; bractee involucriales 20–33, lineares, apice longe attenuatae papillosoaeque, dorso laxe tomentosae, 11 mm. longae, 1 mm. latae. *Flores* aurantiaci, isomorphi, corolla tubulosa 7.5 mm. longa, pentalobata (lobulis 1 mm. longis apice parce papillois). *Antherae* 2.5 mm. longae. *Styli* rami 1.5 mm. longi, apice pilis papillois coronati. *Achaenia* (valde immatura) cylindrata, breviter papillosa, 2 mm. longa. *Pappi* setae albae, brevissime denticulatae, 7 mm. longae.

ARGENTINA. Neuquen: San Martin de los Andes, 900 m.s.m., H. F. Comber 788, 15 Nov. 1926 (typus in Herb. Kew.).

**Senecio neuquensis** Cabrera, sp. nov.; *S. portalesiano* Remy affinis, sed planta glaberrima, achaeniis glabris, pedunculis longioribus differt.

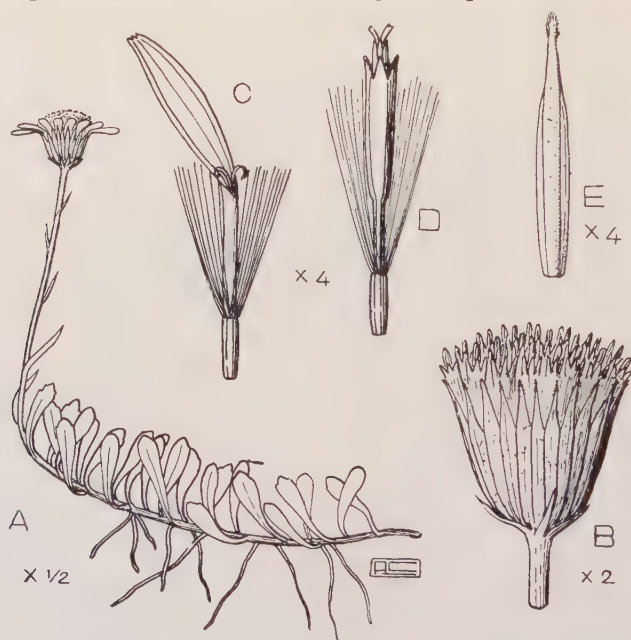


Fig. 2. *Senecio neuquensis* Cabr. A, entire plant; B, head without ligulate florets; C, ligulate floret; D, disc floret; E, involucrial bract.



*Suffrutex* glaber, caulibus ascendentibus haud ramosis 14–18 cm. longis inferne dense foliosis radicanibusque superne nudis tantum aliquis bracteis munitis monocephalis. *Folia* alterna, sessilia, modice firma, spatulata, apice obtusa, basi attenuata, subpetiolata, integerrima vel parte superiore 1–2-dentata, 15–20 mm. longa, 4–5 mm. lata, nervis inconspicuis. *Capitula* radiata, apice caulium solitaria. *Involucrum* campanulatum, calyculatum, 8–9 mm. elatum, 10–12 mm. crassum, floribus disci aliquid brevius; bracteolae calyculi 5–9, subulatae, brevissimae; bractee involucri plus minus 20, lineares, superne acuminatae, apice penicillatae, glabrae vel dorso leviter glandulosae, 8–9 mm. longae, 1 mm. latae. *Flores* lutei (vel aurantiaci), dimorphi. *Flores* marginis feminei, ligulati, tubo 4 mm. longo, ligula 6 mm. longa 1·8 mm. lata, apice tridentata. *Flores* disci androgyni, tubulosi, corolla 7 mm. longa pentaloba (lobulis deltoideis circa 1 mm. longis). *Antherae* 2·5 mm. longae. *Styli* rami 1·5 mm. longi, apice pilis papillosis coronati. *Achaenia* (valde immatura) cylindracea, glabra, 2 mm. longa. *Pappi* setae albae, leviter denticulatae, 5–6 mm. longae.

ARGENTINA. Neuquen: Zapala district, *H. F. Comber* 1261, 1925–1927 (typus in Herb. Kew.).

## XXXII—CONTRIBUTIONS TO THE FLORA OF SIAM. ADDITAMENTUM XLIX.\*

***Callicarpa glandulosa*** *Fletcher* [Verbenaceae–Viticeae]; *C. longifoliae* Lamk. affinis, sed foliis glandulis rubris nec flavis praeditis, nervis lateralibus paucioribus differt.

*Frutex* habitu diffusus, c. 2 m. altus (ex *Kerr*); ramuli obtuse quadrangulares, saepe teretes, glabri, brunneo-grisei. *Folia* elliptica vel oblongo-elliptica, apice acuminata, acuta, basi cuneata, 9–17 cm. longa, 4·5–5 cm. lata, chartacea, supra brunneo-viridia, subtus griseo-viridia, supra parce stellato-pubescentia glandulisque numerosis rotundatis rubris sessilibus vestita, costa supra conspicua subtus prominente, nervis lateralibus 4–6 paribus supra conspicuis subtus prominulis parallelis intra marginem arcuatim junctis, nervis transversis tenuibus plus minusve parallelis, margine dentata, petiolo 0·5–1·5 cm. longo supra canaliculato parce stellato-pubescente suffulta. *Inflorescentia* e cymis axillaribus composita, pedunculis primariis 3–5 cm. longis parum pubescentibus, pedicellis 2 mm. longis glabris, bracteis parvis linearibus ad 2 mm. longis. *Flores* non visi. *Fructus* purpureus (ex *Kerr*), globosus, 3–4 mm. diametro, glaber, apice glandulis flavis sessilibus praeditus.

SURAT. Chumpawn, Ta Ngaw, c. 50 m., by stream in evergreen forest, *Kerr* 11469.

***Premna annulata*** *Fletcher* [Verbenaceae–Viticeae]; *P. paniculatae* *Fletcher* affinis, sed foliis oblongis coriaceis, annulo ad ramulorum nodos piloso differt.

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\*Continued from K.B. 1938, 133.

*Frutex scandens* (ex *Kerr*); ramuli obtuse quadrangulares, glabri vel parum pubescentes nisi ad nodos annulatim pilosi, flavo-fulvi, lenticellis parvis numerosis praediti. *Folia* elliptica vel oblongo, apice acuta, basi leviter attenuata vel rotundata 5–10 cm. longa, 1.5–3 cm. lata, coriacea, supra olivaceo-viridia vel fulva, lucida, glabra nisi ad costam tenuiter pubescentia, subtus pallidiora, glabra, costa supra conspicua subtus prominente, nervis lateralibus 5–6-paribus supra conspicuis subtus prominulis parallelis, nervis transversis validis irregularibus, margine integra vel interdum profunde dentata, petiolo 5–10 mm. longo supra canaliculato pubescente suffulta. *Inflorescentiae* 1.5–2 cm. longae, basi 3 cm. latae, parce pubescentes, ramos parvos laterales terminantes; bracteae lineari-lanceolatae, 1–2 mm. longae, pubescentes. *Calyx* extra glaber vel parce pubescens; tubus 1.75 mm. longus, intus glaber; limbus bilabiatus, labium posticum 1 mm. longum dentibus tribus, labium inferum 0.75 mm. longum dentibus duobus ornatum. *Corolla* extra glabra; tubus 3 mm. longus, intus glaber nisi ad staminum insertionem longe pilosus; limbus bilabiatus; labium posticum 2 mm. longum, 2 mm. latum, labium inferum 3.5 mm. longum, trilobatum, lobis apice rotundatis. *Stamina* 4; filamenta 2.5 mm. longa, 2 mm. supra corollae tubi basin adfixa; antherae 0.5 mm. longae. *Ovarium* globosum, 1 mm. diametro, glabrum. *Stylus* 4 mm. longus, bilobatus.

NAKAWN SRITAMARAT. Patalung, Sak, under 50 m., scrub by stream, *Kerr* 19269.

**Premna Garrettii** *Fletcher* [Verbenaceae–Viticeae]; *P. villosae* C. B. Clarke affinis, sed foliis obovatis nec ovatis nec ellipticis differt; ab etiam affini *P. dubia* Craib calyce intus fere glabro vix pubescente differt.

*Frutex altus*, multiramulus (ex *Garrett*); ramuli obtuse quadrangulares, glabri, griseo-brunnei, lenticellis magnis et conspicue elevatis praediti. *Folia* elliptica vel obovata, apicem versus rotundata, summo apice abrupte acuta, basi parum attenuata, 7–12 cm. longa, 4–5 cm. lata, utrinque brunnea, supra fulvo-pubescentia, subtus fulvo-tomentosa glandulisque sessilibus occultis vestita, costa supra conspicua subtus prominente, nervis lateralibus 5–6-paribus supra conspicuis subtus prominulis parallelis, nervis transversis numerosis parallelis, margine integra ciliata, petiolo 1–2 cm. longo supra profunde canaliculato tomentoso suffulta. *Inflorescentia* terminalis corymboso-paniculata, 4 cm. longa, basi 10 cm. lata, pedunculis pedicellisque leviter tomentosis. *Calyx* extra valde albo-pubescens; tubus intus glaber, pilis paucis brevibus exceptis, 1.5 mm. longus; limbus obscure bilabiatus, labium inferum dentibus duobus minutis ornatum, labium posticum integrum vel subintegrum. *Corolla* flava (ex *Garrett*), extra tenuiter pubescens; tubus 2.5–3 mm. longus, ad staminum insertionem dense pilosus; limbus 4-lobatus, lobis 1.5 mm. longis 1.2 mm. latis apice rotundatis intus glabris. *Stamina* 4; filamenta 3–3.5 mm. longa, 1.5 mm. supra



corollae tubi basin adfixa; antherae 0.25 mm. longae. *Ovarium* globosum, 0.75 mm. diametro, apice tenuiter pubescens. *Stylus* 4.5 mm. longus, bilobatus.

PAYAP. Chiengrai, Doi Tam Tu Pu, summit West Peak, c. 530 m., limestone rock, *Garrett* 296.

***Premna paniculata*** *Fletcher* [Verbenaceae-Viticeae]; *P. Wightianae* Schauer affinis, sed foliis basi attenuatioribus apice acuminatis, panicula minore, fructu haud aspero differt.

*Frutex* scandens (ex *Kerr*); ramuli primo quadrangulares mox teretes, glabri, grisei vel griseo-brunnei, lenticellis numerosis et conspicue elevatis praediti. *Folia* ovata vel elliptica, apice acuta, basi parum cuneata, 4–9 cm. longa, 2–5 cm. lata, chartacea, supra subtusque griseo-brunnea viridi-tincta, glabra, tomento tenui pilorum longiusculorum ad costam excepto, costa supra conspicua subtus prominente, nervis lateralibus 2–4-paribus supra conspicuis subtus prominulis parallelis, margine integra vel parum crenata, glabra vel ciliata, petiolo 3–5 mm. longo supra canaliculato ad canalem parum pubescente suffulta. *Inflorescentiae* 1–2 cm. longae, 1–2 cm. latae, ramos parvos laterales terminantes, pubescentes et glandulosae. *Calyx* extra parce pubescens; tubus 2.5 mm. longus, intus leviter pubescens glandulisque paucis sessilibus munitus; limbus bilabiatus; labium inferum 1 mm. longum dentibus duobus, labium posticum 0.75 mm. longum dentibus tribus ornatum. *Corolla* non visa. *Fructus* obovoideus, 5 mm. longus, 3 mm. diametro, glaber, rugosus.

RACHABURI. Prachuap, Pak Tawan, c. 20 m., dry evergreen forest, *Kerr* 20536.

***Premna quadridentata*** *Fletcher* [Verbenaceae-Viticeae]; *P. scoriarum* W. W. Sm. affinis, sed petiolis longioribus, foliis subtus pilis e costa abeuntibus in ordines duos dispositis notatis differt.

*Frutex* scandens (ex *Kerr*); ramuli teretes, valde nodosi, glabri, obscure grisei vel nigri, lenticellis numerosis magnis conspicue elevatis muniti. *Folia* latissime elliptica, apice obtuse acuminata, basi rotunda nunc subito decurrentia, 7–14 cm. longa, 4.5–11 cm. lata, rigide chartacea, subtus ut supra brunnea saepe flavo-tincta, parum glandulosa, glabra (nisi supra ad costam tenuiter pubescentem et subtus ad axillas venarum caespitoso-pilosas additis insuper pilis brevibus in lineas duas dispositis), costa supra conspicua subtus prominente, nervis lateralibus 5–7-paribus supra conspicuis subtus valde prominulis parallelis, nervis transversis numerosis, margine integra glabra, petiolo 2–4 cm. longo supra canaliculato glabro glandulis sucineis vestito suffulta. *Inflorescentia* 3–7 cm. longa, 6–9 cm. lata, pubescens et glandulosa. *Calyx* extra parum pubescens, glandulosus; tubus intus glaber, 1.25–1.5 mm. longus; limbus bilabiatus, 4-lobatus. *Corolla* alba (ex *Kerr*), extra glabra; tubus 2.75–3 mm. longus, intus pilosus; limbus bilabiatus, labium posticum 1 mm. longum, labium inferum trilobatum 2 mm. longum, lobis apice rotundatis. *Stamina* 4; filamenta 2.5–3 mm. longa;

antherae 0.5 mm. longae. *Ovarium* globosum, 0.75 mm. diametro, glabrum. *Stylus* 4.5 mm. longus, bilobatus.

PUKET. Ranawng, Kaw Chang, edge of evergreen forest bordering beach, *Kerr* 16563.

***Premna repens*** *Fletcher* [Verbenaceae-Viticeae]; *P. annulatae* *Fletcher* affinis, sed foliis pumilis profunde dentatis vel lobatis siccitate obscure griseo-caeruleis valde distincta.

*Frutex* erectus, ad 2 m. altus, nunc ramis prostratis supra saxa calcarea repentibus praeditus (ex *Kerr*); ramuli fere teretes, glabri, brunnei vel brunneo-grisei, lenticellis paucis et conspicue elevatis praediti. *Folia* elliptica vel lanceolata, apice obtuse acuminata, basi anguste cuneata, 2–6 cm. longa, 1.2 cm. lata, chartacea, supra caeruleo-viridia, subtus griseo-viridia, supra parum pubescentia sed saepius glabra, subtus glabra sed glandulis parvis sessilibus brunneis parce vestita, costa supra conspicua subtus prominente, nervis lateralibus 2–3-paribus subtus prominulis parallelis, nervis transversis paucis validis parallelis, margine lobata parum recurva ciliata, petiolo 3–5 mm. longo supra parum canaliculato pubescente suffulta. *Inflorescentiae* 5–7 mm. longae, ramos parvos laterales terminantes, pedunculis pedicellisque pubescentibus praeditae. *Calyx* extra parum puberulus; tubus 1–1.5 mm. longus, intus glaber; limbus bilabiatus, dentibus quinque praeditus. *Corolla* extra glabra vel parce pubescens; tubus 2.25 mm. longus, ad staminum insertionem longe pilosus; limbus bilabiatus; labium posticum 2.5 mm. longum, 2 mm. latum, labium inferum 5.25 mm. longum, trilobatum, lobis apice rotundatis. *Stamina* 4; filamenta 1.75 mm. longa, 1.75 mm. supra corollae tubi basin adfixa; antherae 0.5 mm. longae. *Ovarium* globosum, glabrum, 0.8 mm. diametro. *Stylus* 3.5 mm. longus, bilobatus.

RACHABURI. Prachuap, Sam Roi Yawt, c. 500 m., *Kerr* 10950.

***Premna serrata*** *Fletcher* [Verbenaceae-Viticeae]; *P. amplexanti* *Wall.* affinis, sed foliis parvis ovatis cordatis glabris glanduloso-serratis distinguenda.

*Frutex* circiter 1 m. altus (ex *Kerr*); ramuli vulgo teretes, brunneo-grisei, primo pubescentes, mox glabri, lenticellis numerosis praediti. *Folia* ovata, apice acuta, basi cordata, 3–6 cm. longa, 2–3.5 cm. lata, chartacea, supra viridi-brunnea vel brunnea, subtus pallidiora, supra glabra vel parum pubescentia, subtus praesertim ad costam nervosque laterales pubescentia, glandulosa, nervis supra conspicuis subtus prominulis, nervis lateralibus 4–6-paribus, nervis transversis paucis saepe irregularibus, margine serrata ciliata, petiolo 0.5–1 cm. longo supra canaliculato pubescente suffulta. *Inflorescentiae* 2 cm. longae, basi 2 cm. latae, ramos laterales terminantes. *Calyx* extra glaber, glandulis rotundis sessilibus sucineis praeditus; tubus 1.5 mm. longus, intus glaber; limbus 1 mm. longus, bilabiatus, glandulosus, labium posticum dentibus tribus, labium inferum dentibus duobus ornatum. *Corolla* viridis, purpureo-striata (ex

*Kerr*), extra parum pubescens glandulisque sessilibus vestita; tubus 3·5–4 mm. longus, intus pilosus; limbus bilabiatus, labium posticum integrum, 2·5 mm. longum, 2·5 mm. latum, labium inferum 3 mm. longum, 5 mm. latum, trilobatum. *Stamina* 4; filamenta 2·5–4 mm. longa, 2·5 mm. supra corollae tubi basin adfixa; antherae 0·5 mm. longae. *Ovarium* globosum, 0·8–1 mm. diametro, glabrum; *Stylus* 5·5 mm. longus.

NAKAWN SAWAN. Kampengpet, Kao Hua Mot, c. 900 m., savannah limestone, *Kerr* 6122.

***Premna siamensis*** *Fletcher* [Verbenaceae–Viticeae]; *P. flavescens* Ham. affinis, sed foliis minoribus magis cordatis, calyce dentibus quattuor nec quinque ornato differt.

*Frutex* scandens; ramuli obtuse quadrangulares, pilis longis articulatis glandulisque paucis sessilibus sucineis vestiti. *Folia* ovata vel parum elliptica, apice obtusa, basi rotundata vel saepius cordata, 5–12 cm. longa, 2·5–8 cm. lata, chartacea, supra olivaceo-viridia interdum fere nigra, subtus griseo-viridia, supra parum glandulosa et pubescentia nisi ad costam nervosque laterales pilis longis articulatis hirsuta, subtus pilis similibus dense vestita, costa utrinque conspicua, nervis lateralibus 6–8-paribus subtus conspicuis nervis transversis numerosis parallelis, margine integra ciliata, petiolo 1·5–4 cm. longo tomento denso vestito suffulta. *Inflorescentia* terminalis, corymboso-paniculata, tomentosa, 12–18 cm. longa, basi 14–20 cm. lata, pedunculis primariis 2–7 cm. longis. *Calyx* extra pilis curtis rigidis articulatis vestitus; tubus 1–1·2 mm. longus, intus glaber; limbus 4-lobatus, lobis 0·5 mm. longis apice obtusis. *Corolla* extra parce pubescens; tubus 1·5 mm. longus, intus pilosus; limbus bilabiatus, labium posticum 0·75 mm. longum 1 mm. latum, labium inferum trilobatum 1·75 mm. longum, lobis apice rotundatis. *Stamina* 4; filamenta 2–2·5 mm. longa; antherae 0·4 mm. longae. *Ovarium* obovoideum, 0·75 mm. longum, glabrum vel apice pilis paucis instructum. *Stylus* 3 mm. longus, bilobatus.

PAYAP. Chiengmai, Pang Tawn, *Put* 3810.

***Gmelina attenuata*** *Fletcher* [Verbenaceae–Viticeae]; *G. asiaticae* Linn. foliis biformibus integris et profunde lobatis affinis, sed foliis maioribus basi attenuatioribus, inflorescentiae forma differt.

*Frutex* humilis, circiter 5 m. altus (ex *Kerr*); ramuli quadrangulares, brunneo-variegati, primo pubescentes glandulis albis sessilibus vestiti, mox fere glabri et multo minus glandulosi. *Folia* elliptica vel subobovata, apice subacuminata ibique leviter lobata, basi valde attenuata, 6–10·5 cm. longa, 2–5 cm. lata, chartacea, supra brunnea, subtus griseo-brunnea, supra glabra, subtus parum pubescentia, glandulis rotundis albis sessilibus praedita, costa et nervis lateralibus supra inconspicuis, costa subtus prominente, nervis lateralibus 3–5-paribus subtus prominulis parallelis, nervis transversis validis numerosis parallelis, margine integra parum recurva glabra, petiolo 0·5–2 cm. longo brunneo supra canaliculato



suffulta. *Inflorescentia* terminalis, 2 cm. longa, tomento denso fulvo praedita; flores pedicellis curtis fulvis puberulis suffulti; bracteae ad paniculae basin pubescentes, inferiores 15–20 mm. longae, superiores minimae. *Calyx* extra tomento fulvo vestitus; tubus 4 mm. longus, intus glaber, parum sinuoso-lobatus. *Corolla* flava (ex *Kerr*), immatura, extra tenuiter tomentosa.

PAYAP. Chiangmai, c. 1100 m., open grassy forest, *Kerr* 6224.

***Gmelina paniculata*** *Fletcher* [Verbenaceae–Viticeae]; *G. attenuatae* *Fletcher* affinis, sed foliis maioribus haud lobatis basi rotundatis vel nunc parum attenuatis differt.

*Arbor* parva; ramuli teretes vel obtuse quadrangulares, brunnei, primo parce pubescentes, pilis ad nodos magis numerosis, mox glabri, lenticellis paucis, spinis in axillis foliorum 0·8–1 cm. longis. *Folia* late ovata vel elliptica, apice subacuminata, basi vix cuneata, 7–13 cm. longa, 5–8 cm. lata, chartacea, utrinque brunnea rubicundo-tincta, supra glabra vel parce pubescentia, subtus glabra glandulis numerosis albis rotundatis vel quadrangularibus vestita, costa supra conspicua subtus prominente, nervis lateralibus 4–5-paribus subtus prominulis parallelis, nervis transversis numerosis parallelis, margine integra parum recurva glabra, petiolo 1·5–3 cm. longo brunneo supra canaliculato et praesertim apicem versus pubescente suffulta. *Inflorescentia* terminalis, 2–4 cm. longa, tomento fulvo glanduloso vestita; bracteae ovatae vel lanceolatae, 2·5–10 mm. longae, 1–5 mm. latae. *Calyx* extra glanduloso-pubescent et glandulis magnis nigris vestitus; tubus 3 mm. longus, intus glaber, dentibus quattuor 1 mm. longis 1·5 mm. latis ornatus. *Corolla* extra glanduloso-pubescent; tubus 2·5 cm. longus, intus glaber; limbus bilabiatus, labium posticum 5 mm. longum, 5 mm. latum, labium inferum trilobatum, 10 mm. longum, 18 mm. latum, lobis apice rotundatis. *Stamina* 4, filamentis duobus 14–15 mm. longis 13·5 mm. supra corollae tubi basin adfixis, ceteris 7·5 mm. longis 12·5 mm. supra corollae tubi basin adfixis; antherae 2·5 mm. longae. *Ovarium* obovoideum, 2·8 mm. longum, glabrum. *Stylus* 2·8 cm. longus, breviter bilobatus. *Fructus* ovoideus, parce pubescens, 1·5–2 cm. longus, 1 cm. diametro.

PRACHINBURI. Krabin, Aranya, *Put* 2086.

***Gmelina tomentosa*** *Fletcher* [Verbenaceae–Viticeae]; *G. villosae* *Roxb.* affinis, sed foliis basi deltoideis supra tomentosis, corolla maiore differt.

*Frutex* circiter 2·5–3 m. altus (ex *Noe*); ramuli obtuse quadrangulares, primo valde tomentosi, mox glabri, spinis paucis 0·5 cm. longis praediti. *Folia* juniora ovata, matura deltoidea, apice rotundata vel late obtusa, basi parum cuneata vel deltoidea, 3–8 cm. longa, 3–7 cm. lata, supra fulvo-adpresso-tomentosa, subtus fulvo-tomentosa glandulisque rotundis vel quadrangularibus albis sessilibus praedita, costa supra conspicua subtus prominente, nervis lateralibus 4–6-paribus supra conspicuis subtus prominentibus

parallelis, nervis transversis validis numerosis parallelis, margine integra ciliata, petiolo 1·5–3·5 cm. longo dense tomentoso suffulta. *Inflorescentia* terminalis, 2–5 cm. longa; bracteae parvae, lanceolatae, 4 mm. longae, 1 mm. latae, tomentosae. *Calyx* extra dense tomentosus, glandulis albis glandulisque nigris magnis paucis praeditus; tubus 3 mm. longus, intus glaber, dentibus quattuor 0·5 m. longis munitus, saepe fere sinuoso-lobatus. *Corolla* extra tomento fulvo glandulisque albis vestita; tubus 2 cm. longus, intus glaber; limbus bilabiatus, labium posticum 10 mm. longum, 10 mm. latum, labium inferum trilobatum 18 mm. longum, lobis apice rotundatis. *Stamina* 4; duo filamenta 21–22 mm. longa, 9 mm. supra corollae tubi basin adfixa, reliqua 9–10 mm. longa, 8 mm. supra corollae tubi basin adfixa; antherae 2·5 mm. longae. *Ovarium* glabrum, 2 mm. diametro. *Stylus* 30 mm. longus.

RACHASIMA. Korat, Ban Chum Seng, Noe 211.

**Clerodendron venosum** Wall. var. **pubescens** Fletcher [Verbenaceae–Viticeae]; a typo et ramulis et foliis omnino pubescentibus differt.

PAYAP. Chiangmai, Me Tun, c. 600 m., mixed forest, Kerr 6190.

**Glossocarya crenata** Fletcher [Verbenaceae–Caryopterideae]; *G. premnoidi* Ridl. foliis glanduloso-punctatis affinis, sed foliis minoribus pubescentibus crenatis differt.

*Frutex* habitu diffusus (ex *Lakshnakara*); ramuli obtuse quadrangulares, tomento fulvo vestiti. *Folia* ovata, apice rotundata, basi leviter cordata, 2–3·5 cm. longa, 2–3 cm. lata, chartacea, utrinque griseo-viridia, supra parce glandulosa et pubescentia pilis ad costam nervosae laterales magis numerosis, subtus tomentosa, glandulis numerosis sucineis vestita, costa supra conspicua subtus leviter prominente, nervis lateralibus 3–4-paribus supra conspicuis subtus prominulis parallelis, nervis transversis paucis irregularibus, margine profunde crenata, glabra vel ciliata, petiolo 0·5–1 cm. longo supra parum canaliculato suffulta. *Inflorescentia* terminalis, corymboso-paniculata, 4 cm. longa, basi 4–6 cm. lata. *Calyx* extra valde pubescens glandulosusque; tubus 3 mm. longus, intus glaber, limbus quinquelobatus, lobis 0·8 mm. longis basi 1·5 mm. latis intus glabris. *Corolla* alba (ex *Lakshnakara*), extra valde pubescens et glandulosa; tubus 14 mm. longus, intus glaber, pilis parcissimis longis exceptis; lobi 5, subaequales, 3–4 mm. longi, 1 mm. lati. *Stamina* 4; filamenta 20 mm. longa, 8 mm. supra corollae tubi basin adfixa; antherae purpureae (ex *Lakshnakara*), 1 mm. longae. *Ovarium* globosum, 1 mm. diametro, apice sericeo-pilosum. *Stylus* 15 mm. longus, bilobatus.

UDAWN. Kawnken, near railway lines, *Lakshnakara* 1083.

**Glossocarya longiflora** Fletcher [Verbenaceae–Caryopterideae]; *G. molli* Wall. affinis, sed corollae tubo majore, capsula pilis griseis strigosis munita differt; nec non *G. siamensi* Craib affinis, sed foliis tenuiter tomentosis, corollae tubo majore differt.

*Frutex* scandens (ex *Lakshnakara*) ; ramuli obtuse quadrangulares, primum tomento tenuiter vestiti, mox glabri. *Folia* ovata vel elliptica, apice obtusa vel obtuse apiculata, subacuminata, basi cordata, 4–10 cm. longa, 3·5–7 cm. lata, chartacea, supra brunnea saepe viridi-tincta, subtus brunnea vel griseo-brunnea, supra parce pubescentia, subtus tomentosa glandulisque sessilibus sucineis vestita, costa nervisque lateralibus supra conspicuis, costa subtus prominente, nervis lateralibus 5–6-paribus subtus prominulis parallelis, nervis transversis paucis irregularibus, margine integra, recurva, ciliata, petiolo 5–10 mm. longo fulvo-tomentoso suffulta. *Inflorescentiae* ramos laterales terminantes, 3–8 cm. longae, basi 6–10 cm. latae. *Calyx* extra dense tomentosus ; tubus 3 mm. longus, intus basi maxime sericeus, ceterum glaber, apice sinuatus. *Corolla* alba (ex *Lakshnakara*), extra tomentosa ; tubus 11·5–12 mm. longus, intra glaber ; lobi 5, subaequales, 3–4·5 mm. longi, 2·5–3·5 mm. lati. *Stamina* 4 ; filamenta 18–20 mm. longa, antherae 1 mm. longae. *Ovarium* globosum, 1 mm. diametro, apice sericeo-pilosum. *Stylus* 25 mm. longus, bilobatus. *Capsula* 8–10 mm. longa, 3 mm. diametro, griseo-strigosa.

AYUTHIA. Saraburi, Keng Koi, *Lakshnakara* 284 (type).

LOWER SIAM. Kao Kaw Sawan, c. 150 m., *Annandale* 1832

**Hymenopyramis acuminata** *Fletcher* [Verbenaceae–Caryopterideae] ; *H. siamensi* Craib affinis, sed foliis minoribus apice magis acuminatis tomento breviori vestitis, glandulis in foliorum pagina inferiore fere omnino abditis, utriculo fere glabro differt.

*Frutex* scandens (ex *Kerr*) ; ramuli obtuse quadrangulares, glabri, pilis paucis ad nodos exceptis, griseo-brunnei, lenticellis paucis praediti. *Folia* elliptica vel parum obovata, apice valde acuminata, basi cuneata, 5–8 cm. longa, 2–5·5 cm. lata, rigide chartacea, supra olivaceo-viridia brunneo-tincta, subtus grisea viridi-tincta, supra glabra nisi ad costae basin tomentosa, subtus tomentosa glandulosa, costa nervisque lateralibus supra conspicuis, costa subtus prominente, nervis lateralibus 4–5-paribus subtus prominulis parallelis, nervis transversis validis numerosis parallelis, margine integra glabra, petiolo 1 cm. longo supra parum canaliculato pubescente suffulta. *Panicula* axillaris vel terminalis, foliata, 15–28 cm. longa, basi 15–24 cm. lata, ramis primariis 8–12 cm. longis. *Flores* non visi. *Utriculus* ovoideus, 2–3 cm. longus, acute 4-alatus, glaber vel parce pubescens et glandulosus. *Capsula* obovoidea, 5 mm. longa, 3·5 mm. diametro, fulvo-hirsuta glandulisque numerosis sessilibus sucineis praesertim prope apicem praedita.

CHANTABURI. Krat, Kao Saming, under 50 m., evergreen forest, *Kerr* 17917.

**Hymenopyramis vesiculosa** *Fletcher* [Verbenaceae–Caryopterideae] ; *H. siamensi* Craib affinis, sed tomento breviori vestita, glandulis in foliorum pagina inferiore fere omnino abditis, utriculo fere glabro differt.



*Frutex* scandens (ex *Kerr*); ramuli quadrangulares, parce pubescentes vel glabri, grisei, lenticellis numerosis conspicue elevatis praediti. *Folia* ovata vel elliptica, apice acuminata, acuta, basi rotundata vel parum cordata, 8–15 cm. longa, 4–8 cm. lata, rigide chartacea, utrinque grisea brunneo-tincta, supra glabra, subtus tomentosa et glandulosa, costa supra conspicua subtus prominente, nervis lateralibus 5–6-paribus supra conspicuis subtus prominulis parallelis, nervis transversis validis numerosis parallelis, margine integra, petiolo 1–1.2 cm. longo supra canaliculato primo valde pubescente parumque glanduloso mox glabro suffulta. *Inflorescentia* generis. *Calyx* alba (ex *Kerr*), extra tenuiter pubescens; tubus 1.2 mm. longus, intus glaber; limbus 4-lobatus, lobis 1.5 mm. longis 1 mm. latis. *Stamina* 4; filamenta 2.2 mm. longa; antherae 0.5 mm. longae. *Ovarium* glabrum, 0.3 mm. longum. *Stylus* 2.5 mm. longus, breviter bifidus. *Utriculus* ovoideus, 2–3 cm. longus, 1.5–2.5 cm. diametro, acute 4-alatus, parum pubescens vel glaber. *Capsula* obovoidea, in utriculo inclusa, 4–5 mm. longa, 3–4 mm. diametro, fulvo-hirsuta et glandulosa.

MAHARAT. Pang Pui, c. 420 m., limestone rocks, *Kerr* 3626.

NAKAWN SAWAN. Ban Dan, near Paknampo, c. 40 m., *Kerr* 3011 (*type*).

UDAWN. Nakawn Panom, Muk Dahan, c. 200 m., in rocky crevices, open deciduous forest, *Kerr* 8411. Kawnken, Pu Wieng, c. 100 m., deciduous forest, *Kerr* 20657.

***Sphenodesme odorata*** *Fletcher* [Verbenaceae–Symphoremateae]; *S. microstyli* C. B. Clarke affinis, sed corollae lobis paulo latioribus differt; nec non *S. orbiculari* *Fletcher* corollae lobis oblongis affinis, sed foliis haud orbicularibus, ovario glanduloso differt.

*Frutex* scandens (ex *Kerr*); ramuli obtuse quadrangulares, primo stellato-tomentosi, mox glabri, lenticellis numerosis praediti. *Folia* ovata vel elliptica, apice acuta vel obtusa, basi vulgo rotunda, 12–17 cm. longa, 8–12 cm. lata, subcoriacea, utrinque grisea vel brunneo-grisea, supra fere glabra costa excepta, subtus stellato-tomentosa glandulosa, nervis lateralibus 4–5-paribus ut costa supra conspicuis subtus prominentibus, margine integra glabra, petiolo 1–1.5 cm. longo stellato-tomentoso suffulta. *Cymae* capitatae, 7-florae, in panicula terminali dispositae, bractaeae cuiusque capituli 6, late spathulatae, 2.5–3 cm. longae, 0.8–1.5 cm. latae, apice rotundatae. *Calyx* variabilis, extra tomentosus glandulosus; tubus 3–3.5 mm. longus, intra pilosulus; limbus trilobus; lobi 2 mm. longi, 2.75–3 mm. lati, apice emarginati. *Corolla* alba, odorata (ex *Kerr*); tubus 6–7 mm. longus, intus nisi ad basin glabram pilis longis albis glandulisque numerosis vestitus; limbus lobis 5–7 ornatus; lobi anguste oblongi, 5.5–7 mm. longi, 1.75–2 mm. lati. *Stamina* 5–7 (pro loborum corollae numeor), corollae tubo inclusa, filamenta 1 mm. longa, antherae 0.8 mm. longae. *Ovarium* globosum, 1 mm. diametro, apice glandulosum. *Fructus* immaturus 6 mm. longus, 5 mm. diametro, glaber.

MAHARAT. Lampang, Me Salop, c. 190 m., *Winit* 1264.

PUKET. Ranawng, Kao Tulu, c. 50 m., scrub, *Kerr* 11815 (*type*).

**Sphenodesme orbicularis** *Fletcher* [Verbenaceae-Symphoremataeae]; *S. microstyli* C. B. Clarke affinis, sed foliis orbicularibus, corollae lobis minoribus latioribus differt.

*Frutex* scandens (ex *Winit*); ramuli obtuse quadrangulares, primo tomentosi, mox glabri. *Folia* orbicularia vel elliptica, apice acuta vel obtusa, basi rotundata, 9–12 cm. longa, 8–11 cm. lata, rigide chartacea, supra griseo-brunnea, subtus ferrugineo-brunnea, supra glandulosa, stellatim pubescentia vel fere glabra, subtus stellatim tomentosa, costa supra conspicua subtus prominente, nervis lateralibus 3–6-paribus vulgo 5-paribus subtus prominulis parallelis, nervis transversis numerosis validis parallelis, margine integra ciliata, petiolo 1–1.5 cm. longo fulvo-tomentoso suffulta. *Cymae* capitatae, 7-florae, in panícula terminali dispositae; bracteae cuiusque capituli 6, spathulatae, 1.5–2 cm. longae, 0.4–0.8 cm. latae, acutae vel obtusae, utrinque pilosulae, plus minusve distincte nervatae. *Calyx* extra stellato-tomentosus; tubus 6 mm. longus, intus superne pilosulus; limbus lobis duobus ornatus; lobi 3 mm. longi 3–3.5 mm. lati, apice emarginati. *Corolla* alba (ex *Kerr*), extra tomentosa; tubus 10.5 mm. longus, intra pilosulus nisi ad basin glabram; limbus lobis 5–6 praeditus; lobi anguste oblongi, 7.5 mm. longi, 1.5 mm. lati, acuti vel obtusi, intra pilis brevibus obtusis vestiti. *Stamina* 5–6 (pro lorum corollae numero), corollae tubo inclusa. *Ovarium* 1.5 mm. longum, 1.2 mm. diametro, glabrum. *Stylus* 0.2 mm. longus.

PUKET. Ranawng, Lamlieng, c. 10 m., climbing in scrub, *Kerr* 16411.

**Congea connata** *Fletcher* [Verbenaceae-Symphoremataeae]; *C. siamensi* *Fletcher* involucris bracteis basi iunctis affinis, sed involucris cupula altiore, involucris bracteis longioribus magis angustis, foliis angustioribus minusque pilosis recedit.

*Frutex* scandens (ex *Kerr*); ramuli obtuse quadrangulares vel teretes, tomento fulvo-griseo vestiti. *Folia* oblonga, apice acuta, basi leviter cordata, 7–16 cm. longa, 2–4 cm. lata, rigide chartacea, utrinque viridia, nitida, parce glandulosa et fere glabra, pilis paucis longis albis ad costam exceptis, costa supra conspicua subtus prominente, nervis lateralibus 4–5-paribus supra conspicuis subtus prominulis basi parallelis, nervis transversis numerosis parallelis, margine integra ciliata, petiolo 0.5 cm. longo supra parum canaliculato pilis rigidis parce vestito suffulta. *Cymae* capitatae, 6-florae, in panícula terminali 30–40 cm. longa dispositae; pedunculi cymarum 0.7–1.2 cm. longi, pilis rigidis dense vestiti; bracteae cuiusque capituli 3, rubicundo-albae (ex *Kerr*), chartacea, utrinque pilosulae, plus minusve distincte nervatae, oblongo-ellipticae, 2–3 cm. longae, 0.5–0.8 cm. latae, basi in cupulam 6 mm. longam undique pilis longis rigidis praeditam connatae. *Calyx* intus ut

extra sericeus ; tubus 6·5–7 mm. longus ; limbus 5-lobatus ; lobi 1·5 mm. longi, basi 1–1·5 mm. lati, apice acuti. *Corolla* extra parum pubescens ; tubus 8·5 mm. longus, intus glaber nisi ad staminum insertionem tenuiter pubescens ; limbus bilabiatus ; labium posticum 4 mm. longum, bilobatum, lobis 2·5–3 mm. longis apice rotundatis, labium inferum deflexum, trilobatum, lobis 1·75 mm. longis apice rotundatis. *Stamina* 4 ; filamenta ad 14 mm. longa. *Ovarium* cylindricum, 0·75 mm. longum, 1·25 mm. diametro, apice tenuiter pubescens. *Stylus* 18·5 mm. longus, breviter bilobatus.

CHANTABURI. Krat, Kao Saming, under 50 m., evergreen forest, *Kerr* 17913 (*type*). Kaw Chang, Klawng Mayom, c. 50 m., evergreen forest by stream, *Kerr* 6810. East Coast, on high banks of stream below waterfall, *Mrs. D. J. Collins* 569. Kaw Chang, *Eryl Smith* 306.

**Congea siamensis** *Fletcher* [Verbenaceae-Symphoremateae] ; *C. tomentosae* Roxb. affinis, sed foliis minus pilosis, involucri bracteis basi crateriformibus differt.

*Frutex* scandens (ex *Kerr*) ; ramuli teretes, pilis longis articulatis glandulisque sucineis dense vestiti. *Folia* elliptica vel interdum oblongo-elliptica, apice acuta subacuminata, basi rotundata vel interdum cordata, 8–17 cm. longa, 3–7 cm. lata, coriacea, supra viridia vel brunneo-viridia et nitida, subtus pallidiora, supra parce glandulosa et pubescentia vel fere glabra, subtus pilis longiusculis sericeis articulatis praedita, ad costam nervosque laterales pilis patentibus haud numerosis munita, glandulis parvis brunneis sessilibus magis numerosis quam supra instructa, costa supra conspicua subtus prominente, nervis lateralibus 6–7-paribus supra conspicuis subtus prominulis parallelis, nervis transversis validis numerosis parallelis, margine integra ciliata, petiolo 0·5–1 cm. longo terete tomentoso suffulta. *Cymae* capitatae, 6-florae, in panicula terminali dispositae ; pedunculi cymarum 1–1·5 cm. longi, pilis fulvis articulatis dense vestiti ; bractee cuiusque capituli 3, utrinque pilosulae, plus minusve distincte nervatae, late spathulatae vel obovatae, 2–2·5 cm. longae, 0·75–1 cm. latae, basi in cupulam 4 mm. longam undique pilis longis rigidis praeditam connatae. *Calyx* extra pilis numerosis longis albido-sericeis articulatis vestitus ; tubus 4·5 mm. longus, intus pilosulus ; limbus 5-lobatus ; lobi 1–1·5 mm. longi et lati, apice acuti. *Corolla* extra glabra ; tubus 7 mm. longus, ad staminum insertionem hirsutus, ceterum glaber ; limbus bilabiatus ; labium posticum bilobatum, lobis spathulatis 4·25 mm. longis 1·5 mm. latis, labium inferum deflexum, trilobatum, lobis 1–1·2 mm. longis basi 1·25–2 mm. latis apice rotundatis intus glabris. *Stamina* 4 ; filamenta 13–25 mm. longa. *Ovarium* cylindricum, 1·75 mm. longum, 0·9 mm. diametro, glabrum. *Stylus* 18 mm. longus, breviter bilobatus.

PRACHINBURI. Krabin, Ban Keng, c. 25 m., savannah, *Kerr* 19792 (*type*).

RACHABURI. Kanburi, Sisawat, c. 50 m., climbing on bamboo along river bank, *Kerr* 10166.



XXXIII—PLANTS NEW TO ASSAM: X\* C. E. C. FISCHER.

The regions shown in brackets after the specific name are those from which the plant has been previously recorded.

**Viburnum atro-cyaneum** C. B. Clarke [Caprifoliaceae].

(Mishmi Hills).

Naga Hills: Pulebudze, 2100 m., fls. April, *N. L. Bor* 2707.

This species is included here because the flowers appear not to have been previously described.

*Cymes* up to 3 cm. diam., crowded. *Calyx* very small, turbinate; lobes triangular-ovate, subacute. *Corolla* white, rotate, 4 mm. diam.; lobes broadly ovate, rounded, twice as long as the tube. *Ovary* broadly conical, 1-celled; style O.

**Vernonia blanda** DC. [Compositae].

(Burma).

Naga Hills: Saramati Ridge, 1800 m., fls. March, *N. L. Bor* 2928, "Climbing; flowers pink."

**Craibiodendron Henryi** W. W. Smith [Ericaceae].

(W. China, Jaintea Hills).

Naga Hills: Pedi, 1800 m., fls. white, Sept., *N. L. Bor* 6271; Kekrima, 1650 m., frt. March., *N. L. Bor* 2828, "small tree." Jaintea Hills: near Jowai, *King's Collector* without number or date.

In Notes Roy. Bot. Gard. Edinb. **5**, 159, W. W. Smith has tentatively named a specimen collected at Jowai by G. Mann as *C. Mannii*, but suggests that it may prove to be identical with *C. Henryi*. Bor's specimens show that this apprehension was correct; I can find no differences between the two. The description of *C. Henryi* states that the staminal filaments are glabrous, but I have found them minutely papillose to hispidulous near the apex in all specimens examined, which include the type numbers.

**Diospyros glandulosa** Lace [Ebenaceae].

(Upper Burma).

Naga Hills: Kohima, 1410 m., fls. pink, April, *N. L. Bor* 2720, "a small tree."

**Jasminum dumicola** W. W. Smith [Oleaceae].

(Yunnan).

Manipur: without precise locality or date, *G. Watt* 6197, 7384; Moa, 1650 m. fls. Nov., C. B. Clarke 41952 A & C. Naga Hills: Khizobama, 1950 m., fls. white, pink outside, March, *N. L. Bor* 2822; Saramati Ridge, 1800 m., flowers scented, March, *N. L. Bor* 2900. The first three sheets mentioned were identified by C. B. Clarke as "*J. attenuatum* Roxb. var.?" but they are certainly this species.

**Trachelospermum auritum** Schneid. [Apocynaceae].

(Yunnan).

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\* Continued from K.B. 1937, 475.

Manipur : Maofang, 1200 m., fls. May, *G. Watt* 7177, " an extensive climber covering trees with a show of white flowers " ; Kangpokpi, 900 m., fls. yellowish-white, June, *N. L. Bor* 6376.

**Swertia Lacei** *Craib* [Gentianaceae].

(N. Burma).

Naga Hills : Kekrima, 1500 m., in grass-land, fls. spotted with pale blue, Oct., *N. L. Bor* 6639.

**Cordia Clarkei** *Brace ex Prain* [Boraginaceae].

(Chittagong).

Naga Hills : Khegwo, 1200 m., frt. March, *N. L. Bor* 2858, " a small tree " ; Tizu, 900 m., fls. white, Nov., *N. L. Bor* 6799.

**Ehretia macrophylla** *Wall.* [Boraginaceae].

(Nepal and W. China).

Naga Hills : Pulebudze, 1410 m., fls. white, sweet-scented, April *N. L. Bor* 2726.

**Lycopsis arvensis** *Linn.* [Boraginaceae].

(Europe, Kashmir, Tibet).

Naga Hills ; Japvo 2970 m., fls. bluish-purple, Sept., *N. L. Bor* 6507.

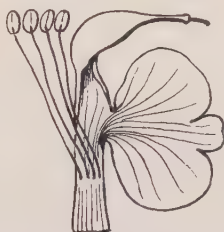
**Lindenbergia philippensis** *Benth.* [Scrophulariaceae].

(Chittagong, Burma, Malaisia).

Naga Hills : Kerari, 750 m., fls. yellow, March, *N. L. Bor* 2879.

**Pedicularis curvipes** *Hook. f.* [Scrophulariaceae].

This species is known only from fruiting specimens collected by C. B. Clarke in Sikkim and at Japvo in the Naga Hills and the flowers have hitherto remained undescribed. Dr. N. L. Bor, I.F.S., has obtained the flowers in the second of the above localities and the following description is from his specimen.



*Pedicularis curvipes* Hook. f. Corolla partly opened out,  $\times 1.5$ .

*Calyx* tubular-campanulate, slightly unequal at the base, 6.5 mm. long, mouth truncate in front with 2 teeth at the back 2.5 mm. long, triangular-ovate, the apex expanded in a lozenge shape, acute, pectinately toothed. *Corolla-tube* slender, 1.1 cm. long, glabrous ; lip semicircular in outline, 1.3 cm. wide, 0.9 cm. long, 3-lobed, midlobe smaller than the other two, emarginate ;

galea 1.4–1.5 cm. long, inflated and bent at right angles a little below the middle, tapering to a horizontal, shortly 2-fid, lobulate beak. *Stamens* inserted 4.5 mm. above the base of the corolla-tube ; filaments filiform, sparsely villous ; anthers broadly elliptic oblong, obtuse, 2 mm. long, glabrous. *Ovary* ellipsoid, 2.5 mm. long ; style slender, shortly exserted from the beak of the galea.

Naga Hills, Japvo, 2970 m., fls. Sept., *N. L. Bor* 6425.

***Eranthemum ciliatum*** (*Craib*) *R. Ben.* [Acanthaceae].

(Upper Burma).

Naga Hills : Tizu river bed, 750 m., fls. bluish-mauve, March, *N. L. Bor* 2939.

***Plectranthus scrophularioides*** *Wall.* [Labiatae].

(Kumaon to Sikkim).

Naga Hills : Kohima, 1500 m., fls. white, Sept., *N. L. Bor* 6514, " a straggling shrub."

***Pogostemon nigrescens*** *Dunn* [Labiatae].

(Yunnan).

Naga Hills : Zekwera, 1650 m., fls. magenta, Aug., *N. L. Bor* 6203.

***Mirabilis jalapa*** *Linn.* [Nyctaginaceae].

(S. America—run wild in most countries, but not actually recorded from Assam).

Naga Hills : Kekrima, 1620 m., fls. magenta, June, *N. L. Bor* 4468, " gregarious in a nullah."

***Alseodaphne dumicola*** *W. W. Smith* [Lauraceae].

(W. China).

Naga Hills : Benroumi, 1800 m., fls. May, *N. L. Bor* 2662 ; Baimho, " all over the hills," 1500 m., frt. July, *N. L. Bor* 5082, " a very large and tall tree ; excellent timber."

***Illigera villosa*** *C. B. Clarke* [Hernandiaceae].

Naga Hills : Chipoketami, 1500 m., fls. pink, July, *N. L. Bor* 5091 ; Kohima, 1500 m., fls. May, *N. L. Bor* 6366 ; " creeper ; used as a febrifuge."

When he described this species from Kohima (*Jour. Linn. Soc.* **25**, 22 : 1889) *C. B. Clarke* had seen no flowers and he suggested that it might turn out to be merely a variety of *I. khasiana* *C. B. Clarke*. The flowers now available, however, show sufficient divergence to establish the plant as a good species. They are therefore described below. The species differs from *I. khasiana* *C. B. Clarke* by the following floral characters :

The flowers are in short corymbs and not in elongate cymes ; the petals are broader in proportion ; the stamens are much shorter, and shorter than the style, with papillose-glandular filaments ; the staminodes are entire ; the ovary and style are setose.

*Petiole* up to 9 cm. long. *Leaflets* up to 12 cm. long and 6.5 cm. wide. *Inflorescence* supra-axillary, corymbose, 2–3 cm. diam. ;



peduncle 2-4 cm. long, pubescent, as are the branches and short pedicels; bracteoles ovate, obtuse, 1.5-3 mm. long, rather densely pubescent on both sides, ciliolate. *Calyx* campanulate, 9-10 mm. long, tube short, lobes ovate-oblong, acute or obtuse, 7-8 mm. long, 3-3.5 mm. wide, sparingly setose without, ciliolate. *Petals* ovate-oblong, obtuse, 6-6.5 mm. long, 3 mm. wide, puberulous on both sides, minutely ciliolate. *Staminodes* elliptic-oblong, obtuse, entire, concave, 3 mm. long, 1.5 mm. wide, narrowed at the base and almost stalked. *Stamens* 4 mm. long; filaments stout, papillose-glandular as are the connectives; anthers 2 mm. long; pollen granular. *Ovary* more or less quadrangular, 2.5-3.7 mm. long, densely hairy or setose; style slender 4.2 mm. long, setose.

**Euphorbia Maddeni** Boiss. [Euphorbiaceae].

(W. Himalayas).

Naga Hills: Khonoma, 1500 m., frt. April, *N. L. Bor* 2735; "Very common in the village, growing on walls."

This may be more properly a variety with oblong seeds 1.3 mm. long, ashy-grey, obtusely 5-gonous, the sides pitted or the pits joined into grooves and black.

**Hedychium venustum** Wight [Zingiberaceae].

(S. India, Sikkim).

Naga Hills: Kekrima, 1800-2100 m., fls. yellow, July, *N. L. Bor* 6317.

**Cirrhopetalum elatum** Hook. f. [Orchidaceae].

(Sikkim Himalayas).

Naga Hills: Thekubama, 2160 m., fls. brown, June, *N. L. Bor* 4448.

**Cirrhopetalum Wallichii** Lindl. [Orchidaceae].

(Nepal, Sikkim).

Naga Hills; Japvo, 2500 m. fls. Sept., *N. L. Bor* 6415.

**Calanthe biloba** Lindl. [Orchidaceae].

(Nepal, Sikkim).

Naga Hills: Shiloi Jopi, 1800 m., fls. purple, Nov., *N. L. Bor* 6740.

**Gastrochilus pseudodistichus** (King et Pantl) Schltr. [Orchidaceae].

(Sikkim).

Naga Hills: Paona, 1800 m., fls. banded brown, Sept., *N. L. Bor* 6278.

**Phyllomphax galeandra** (Rchb. f.) Schltr. [Orchidaceae].

(W. Himalayas, Central India, China).

Naga Hills: Khizobama, 1500-1800 m., fls. July, *N. L. Bor* 5100. "Lip broad, red. Stem eaten."

## XXXIV—MISCELLANEOUS NOTES.

**The Director.**—The Director has been elected an Honorary Fellow of the Botanical Society of Edinburgh.

**The Royal Horticultural Society Honorary Professorship.**—Sir William Wright Smith, F.R.S.E., V.M.H., Regius Keeper of the Royal Botanic Garden, Edinburgh, has accepted the invitation of the Council of the Royal Horticultural Society to succeed the late Dr. A. B. Rendle as Honorary Professor of Botany to the Society.

**Australian Agricultural Appointments.**—We learn with interest that Prof. A. E. V. Richardson, Director of the Waite Agricultural Research Institute, and Waite Professor of Agriculture at the University of Adelaide, S. Australia, has been appointed Deputy Chief Executive Officer of the Commonwealth Council for Scientific and Industrial Research. Prof. Richardson has been succeeded by Prof. J. A. Prescott, Professor of Agricultural Chemistry at the Institute. For further information regarding these appointments, see the *Journ. Austr. Inst. Agr. Sci.* **4**, 53 (1938), and *Nature*, April 30, 1938, p. 800.

**STEPHEN TROYTE DUNN.**—It is with great regret that we record the death at his home in Sheen on 18th April, 1938, of Mr. S. T. Dunn, who had been associated with Kew at intervals spread over a period of 30 years. Dunn was the second son of the late Rev. James Dunn and was born on the 26th August, 1868. He was a student at Merton College, Oxford, where he took a B.A. degree.

His association with Kew began in September 1898, when he was appointed Private Secretary to the Director, Sir W. T. Thiselton-Dyer. He remained in that post until March 1901, when he became Assistant for India in the Herbarium. In February 1903 he left Kew to take up the appointment of Superintendent of the Botanical and Forestry Department in Hong Kong. During his sojourn in Hong Kong he made two botanical expeditions into China, to Fokien and to Swatow, and obtained a good working knowledge of Chinese plants that stood him in good stead in later years. For private reasons he resigned his post in Hong Kong, and returned to England in 1910.

From 1913 to 1915 he acted as Official Guide in the Royal Botanic Gardens, Kew. During the later months of this period he also assisted the late Mr. J. S. Gamble in the preparation of the first part of the "Flora of the Presidency of Madras." He then went on a visit to America and on his return was re-appointed as Assistant for India in October 1919, a post he retained until January 1925. From that date until his retirement in 1928 he was Temporary Botanist in the Herbarium.

Besides a good deal of lesser work, mainly appearing in the pages of the *Kew Bulletin*, Dunn wrote the following books and articles :

"Flora of South West Surrey" (1893); "Descriptions of New Chinese Plants" (Journ. Linn. Soc. 1903); "The Alien Flora of Britain" (1905); "Revision of the Genus *Illigera*" and "A botanical Expedition to Central Fokien" (Journ. Linn. Soc. 1908); "Revision of the Genus *Millettia*" (Journ. Linn. Soc. 1912); "Revision of the Genus *Actinidia*" and "A Supplementary List of Chinese Flowering Plants" (Journ. Linn. Soc. 1911); "Flora of Kwangtung and Hongkong" (with W. J. Tutchter, K.B., Add. Ser. 10, 1912); "Notes on Chinese Labiatae" (Notes Bot. Gard. Edin. 1913); "A key to the Labiatae of China" (Notes Bot. Gard. Edin. 1915). He was elected a Fellow of the Linnean Society in 1895, and was also a Fellow of the Royal Geographical Society.

Dunn's was a particularly self-effacing character, but he was quick to recognise merit in others. One could not come into contact with him without realising his essential kindness and his fortitude. He will always be remembered by his associates with affection.

C. E. C. FISCHER.

**Two new names in *Aglaia*.**—(1) *Aglaia triplex* Ridley, nom. nov.—I find that *A. trimera* Ridley in K.B. 1930, 368, is anticipated by *A. trimera* Merrill in Univ. Calif. Publ. Bot. **15**, 128 (1929). I therefore substitute the above name for my species. (2) *Aglaia triandra* Ridley, nom. nov.—I propose to substitute this name for *A. unifoliolata* Ridley in Kew Bull. 1930, 369, as the latter name is already occupied for a plant from Celebes described by Valetton in Meded. 's Lands Plantent. **19**, 635 (1898). *A. triandra* Ridley was collected near Kuching in Sarawak by Haviland (No. 2849 (type) and also 1745).

H. N. RIDLEY.

**Sixty Years of Botany.\***—Botanists and many others interested in the history of Botany in this country are greatly indebted to Professor F. O. Bower for his delightfully written "Sixty Years of Botany in Britain." It is a sad reflection that he is almost the only botanist still with us who has been an eye witness, and has taken so large a share in many of the changes which were brought about, especially during the first twenty of the sixty years under review. It will no doubt be a surprise to the present generation of botanists to learn that the awakening of an interest in natural sciences was due not to the Universities of Oxford, Cambridge or Edinburgh, where Botany—except on the dreariest of systematic lines—was in a moribund condition, but to the introduction of teaching in natural science in the National or Elementary Schools throughout the country.

Since there were no teachers competent for the task, the Normal School of Science was founded at South Kensington with Prof.

\* "Sixty Years of Botany in Britain (1875–1935). Impressions of an Eye-Witness." By F. O. Bower, Sc.D., LL.D., F.R.S. Macmillan & Co. Ltd., London. 1938. Pp. vii+112. With frontispiece and 13 other illustrations. Price 10s. 6d.



T. H. Huxley as Dean, and it was to his stimulus and to the band of keen young botanists—Thiselton-Dyer, Vines and Bower—who applied Huxley's practical methods to the teaching of Botany that the renaissance of Botany as a living science in this country is mainly due. Henry Marshall Ward was one of the earliest students at the Normal School of Science who took the courses of Botany for teachers which were being given by Thiselton-Dyer in 1875, when Vines was one of the Demonstrators.

It is little to be wondered at that while Botany at the Universities was in a condition of "academic petrification of an earlier school," the younger generation, who had been inspired by the writings of Hofmeister, Sachs and de Bary, should go to Germany and work in Sachs' laboratory at Würzburg or under de Bary at Strassburg.

Here then were to be found at one time or another Vines, Walter Gardiner, Bower, Francis Darwin, Bayley Balfour, Marshall Ward and D. H. Scott, working alongside such subsequent leaders as Errera, Klebs, Solms-Laubach, Elfving, Schimper and other well-known European botanists.

Bower in his 'Wanderjahre' chapter (IV) gives an interesting picture of work in the laboratories at Würzburg and Strassburg, from which the heaven was brought back to enlighten the darkness brooding over botany in the home Universities.

Thiselton-Dyer, who was so largely responsible for the re-birth of botany as a living science, both by his teaching at South Kensington and by his share in translating the first edition of Sachs' Text Book of Botany, never had the opportunity of working on the Continent. His influence on so many botanists slightly his junior is therefore all the more remarkable, just as was his extraordinary knowledge of the Botany of the Empire and his insight into the problems of Empire development on scientific lines, when he had never travelled outside Europe.

Of all that remarkable set of young botanists who spread the botanical Gospel some sixty years ago, Thiselton-Dyer is perhaps not only the most outstanding figure, but also the one whose attainments and influence have never received their proper appreciation.

The story of the part that Kew and especially the Jodrell Laboratory played in the awakening of Botany is of particular interest, when Bower, Gardiner and Scott were working together in the room now used by the Keeper, with Thiselton-Dyer near at hand and in close touch with all that was in progress. It is pleasant to think of D. H. Scott riding over every day from his home at Bromley across Richmond Park to work in the Jodrell!

To most readers, Chapters VII, VIII, IX and X will be of the greatest interest, because of the admirable character-sketches—accompanied with portraits—of the principal pioneers in the reform of scientific botanical teaching.

Huxley, Thiselton-Dyer, Vines, Marshall Ward, Bayley Balfour, and the foundation of the Annals of Botany, Scott, Gardiner,

Williamson, Daniel and F. W. Oliver, Kidston, Gwynne-Vaughan and Francis Darwin, are all depicted in a masterly manner, and live again before one as one reads the sympathetic and illuminating account of their work.

The book includes a chapter (XI) entitled "The Morphological Kaleidoscope" which gives a comprehensive Sketch of the changes of outlook on the vegetation of the land during the period since 1875, a valuable summary, though as the author points out it is written in a more technical manner and therefore suffers somewhat in comparison with the easy flowing style of the preceding chapters.

In the concluding chapter, "Past—Present—Future," the author's aim is to place the events he has chronicled "in relation to the broad stream of scientific progress, and to touch upon the secondary effects by which botanical science now impinges in increasing degree upon modern life; expanding its amenities, and tending ever more effectively to supply its needs." The chapter forms a valuable summary of the various trends of botanical study and research and its many ramifications at the present day.

A. W. H.

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**Critica Botanica.\***—The late Sir Arthur Hort's scholarly translation of the *Critica Botanica* makes accessible for the first time to those who are not Latin scholars the views on botanical nomenclature held by Linnaeus in 1737. An outline of these views had been published by Linnaeus in his *Fundamenta Botanica* (1736), §§210–324, in a series of aphorisms grouped under the headings *Nomina*, *Differentiae*, *Varietates* and *Synonyma*, dealing respectively with generic, specific and varietal names, and synonyms. The *Critica Botanica* explains the aphorisms and illustrates them by many examples.

While writing his *Hortus Cliffortianus* and *Genera Plantarum* Linnaeus had found plant nomenclature to be in urgent need of reform, and had introduced many name-changes which he subsequently justified in the *Critica*. To him, the origin and form of a name was all-important. No barbarous or hybrid names could be allowed, and no generic names ending in *-oides* or composed of two separate words. Classical names of plants were the best, and if any such were found to be superfluous for the genera to which they were originally applied in the classics, they could be used for genera unknown to the ancients.

In considering his views on specific names it should be remembered that the phrase-names then current were primarily *specific diagnoses* and only secondarily *names*. Hence he condemned the inclusion of the name of the discoverer or of the country of

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\* The "*Critica Botanica*" of Linnaeus. Translated by the late Sir Arthur Hort, revised by Miss M. L. Green, with an Introduction by Sir Arthur W. Hill. London, Bernard Quaritch, printed for the Ray Society, 1938. Pp. xxvii + 239. Price 12s. 6d.



origin or habitat in the specific name, as these afforded no diagnostic characters. Similarly, the use of comparatives and superlatives was ruled out. But when Linnaeus introduced binary specific names for common use (*nomina trivialia*), in 1753, these objections disappeared, as these names were used only for reference and not for determination. Thus in 1753 we find names such as *Erica Plukenetii*, *Genista anglica*, *Stachys palustris*, *Plantago major*, *Anthemis altissima*, which he would have excluded in 1737.

To the general botanist perhaps the most interesting part of the book is the chapter on specific names, since it includes estimates of the relative constancy of different characters. Linnaeus considered the number, shape, position and proportion of the various parts as of primary importance. Leaves afforded the most natural diagnostic characters, and the *fulcra* (i.e., bract, tendril, spine, prickle, petiole, peduncle, scape, stipule and gland) were also useful for discriminating species.

The thanks of botanists are due to the Ray Society for the publication of this translation of a classic work on plant-nomenclature.

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#### **Report on the Hluhluwe Game Reserve, Zululand.\*—**

In 1936 Dr. J. S. Henkel, late of the South African Forestry Service, was invited by the Provincial Executive Committee of Natal to carry out an ecological investigation of this reserve embracing both plants and animals and with special reference to tsetse flies.

The Hluhluwe Game Reserve was established in 1887, and is an unfenced area of Crown land of nearly 40,000 acres situated in Zululand, in approximately latitude 28°S. and longitude 32°E. It is controlled by the Natal Provincial Government for preserving and maintaining the indigenous species of game, and is thus also a national asset of great value for the preservation of the flora, the existing vegetation being for the most part *primaeval*.

Comprehensive accounts of the area are given dealing with the topography, drainage, soils and climate. An important factor is the wind, which exercises a considerable influence on the vegetation and its associated animals. The highest recorded temperature during two years' observations at Empangeni (210 ft. altitude) was 106°F., in October, the lowest 39°F., in June, and at Hlabisa (1,864 ft. altitude) a maximum of 105° in January, and a minimum of 42°F. in June.

The rainfall is somewhat irregular, the summer months being the wettest. Years of low rainfall sometimes occur. In 1935 the vegetation was seriously affected, many trees and shrubs having died or lost their crowns. Recurring periods of this kind are reflected

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\* J. S. Henkel, D.Sc., Report on the Plant and Animal Ecology of the Hluhluwe Game Reserve, with special reference to Tsetse Flies. Pp. 35, with 13 plates of photographs and a map.—The Natal Witness, Ltd., Pietermaritzburg, 1937.



in the woody plants of the lowlands, usually of short stature with bushy rounded crowns.

A detailed account of the plant-communities is given, these falling under three distinct zones which are shown on a large-scale coloured map.

There are two species of tsetse fly in the Reserve, and the report shows that definite physical, climatic and vegetative features, as well as soil conditions, are essential for the continued existence of both species. Control measures are dealt with and methods suggested for the elimination of breeding places by altering shade and soil conditions.

Dr. Henkel's studies indicate that tsetse flies are confined in Zululand to definite localities of limited area, mainly sandy alluvial soils, from which, during favourable seasons, they spread into surrounding areas, and that if these true breeding places are eliminated or rendered unfavourable for the development of larvae and pupae, the flies can be exterminated.

The report is a very valuable piece of botanical and zoological research, and provides most interesting reading.

J. HUTCHINSON.

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**La Mortola Garden\*.**—A new edition of the "Hortus Mortolensis" has long been desired and Lady Hanbury's book "La Mortola Garden," which contains a list of the plants in cultivation in this famous Riviera garden, is therefore a welcome publication.

The book, however, is far more than a mere list of plants, since it consists of a Foreword of 4 pages, 7 pages devoted to obituary notices of the late Sir Cecil Hanbury—of whom the book is a worthy memorial—and 44 pages of introduction written by Lady Hanbury, in which much interesting information is given of the history of the garden and the many alterations that have been made during recent years.

The "Hortus" proper occupies 138 pages in double column, the plants being arranged alphabetically according to the genera, the family being given after each genus. References are included to Botanical Magazine and other good figures, and also, where no figures exist, to accessible descriptions. Most of the books referred to are in the La Mortola Garden Library.

The usefulness of the list is enhanced by recording with an appropriate symbol whether the plants are annuals, biennials, shrubs or trees, or climbing plants. Indigenous plants are also distinguished.

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\*"La Mortola Garden: Hortus Mortolensis, being an illustrated catalogue of the plants cultivated in the garden of Sir Cecil Hanbury, Kt., . . . at La Mortola, Ventimiglia, Italy". Compiled with the assistance of Sig. Ercoli Mario, Curator, Cav. Lorenzi Maurizio, Secretary. With an Introduction by Lady Hanbury, O.B.E. London, Oxford University Press, Humphrey Milford. 1938. Pp. lxvi+158. Pl. 62. Price 28s.

Following the plant lists come 20 pages of Garden Notes by Lady Hanbury and 58 charming pictures of the garden and of special plants in cultivation. Two graphs showing seed-distribution and rainfall in the year 1900-1936 and plans of the garden in 1914 and 1937 complete this handsome volume and indicate the changes effected in recent years by Sir Cecil and Lady Hanbury which have added so greatly to the aesthetic beauty of the garden.

The garden is especially rich in the collection of *Cacti* and South African succulent plants, the *Mesembryanthemums* and allied genera and *Aloes* being very well represented. South African bulbous plants, as may be expected, flourish in the garden and add greatly to its beauty and interest. The collection of *Citrus*, which are referred to on p. 42 as "Agrumi," a word which may puzzle many readers, is of particular interest and dates from the early days of the garden when Sir Thomas and his brother Daniel laid the foundations and established the botanical character of La Mortola.

The story of the acquisition and development of the site by Sir Thomas Hanbury, as recorded both by the late Sir Cecil Hanbury in the opening pages, and by Lady Hanbury in the Introduction, is of great interest and one learns how much the scientific interest of the garden, which happily is still maintained, was due to the collaboration of Daniel Hanbury, who was a keen botanist, with his younger brother Sir Thomas.

Sir Cecil fully maintained the botanical interest and value of the garden and it was mainly after his marriage that so much was done to enhance its beauty. It is to be hoped that the exchange arrangement of student gardeners with Kew may long be continued for the benefit of both Institutions.

The earliest catalogue of the plants in cultivation was published in 1889 and the last, the "Hortus Mortolensis," in 1912. Many losses have been incurred during the past 25 years, while many interesting additions have been made. It is to be hoped that the publication of this new list will ensure the survival of so many of the plants for which La Mortola is justly famous.

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